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THE
NAUTICAL MAGAZINE

FOR 1878.

NEW SERIES.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.

“THE SEAS BUT JOIN THE NATIONS THEY DIVIDE.”

VOLUME XLVII.



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THE NAUTICAL MAGAZINE.

FORTY-SEVENTH YEAR.

VOLUME XLVII.—No. I.

JANUARY, 1878.

THE EMIGRANT ABROAD.
LIVERPOOL TO NEW YORK.

WE have long been of opinion that the emigrant leaving Europe for America is, for his state of life, an exceptionally fortunate individual, that the hardships and privations he is popularly supposed to undergo, are myths pure and simple ; that, on the contrary, from the moment he leaves his native shore till he arrives at his final destination, he is so well treated, so well cared for and looked after, that it is almost impossible he can go wrong. Having recently had an excellent opportunity of verifying the truth of this belief, we propose, in the present article, to follow the course of the steerage passenger, from the time of leaving Liverpool till he is put in the train at New York ; and more especially to devote our attention to the excellent arrangements which are in operation at the well-known emigrant dépôt at Castle Gardens, and its off-shoot, Ward's Island. We have recently returned from New York, having made the round voyage in the s.s. *City of Chester*, and can therefore speak from actual knowledge of the matters in question.

The treatment of steerage passengers on the great Atlantic lines, is

now so generally well known, that it will be unnecessary to say very much on the subject. On embarking, they undergo a strict medical examination, and all cases of contagious disease are carefully weeded out and sent on shore, where they are kept, at the company's expense, till the Board of Trade Medical Officer pronounces them fit to proceed to sea. The sanitary arrangements of the ship, the ventilation, hospital accommodation, food, and medicines, are also subject to inspection by the same officer. The steerage, in the ship we embarked in, is situated on the main deck, the orlop or lower deck being now in the present dearth of passengers rarely used; it is large, lofty, and well ventilated. We made frequent visits to it, both by day and night, and on all occasions found it perfectly clean, the air smelling remarkably sweet and pure. The medical officer of the ship made a tour of inspection every morning, and the captain and purser also went round both night and morning to see that everything was right, and to hear any complaints that might be made. There are two hospitals on the upper deck, but the only occupant was a fireman, who had scalded his leg very severely; the health of the passengers was remarkably good; the water-closets were kept quite clean by a stream of water constantly flowing through them.

Respecting the quality and quantity of the food, a mere glance at the bill of fare for one day will suffice to prove that the emigrant of the present day is not likely to faint by the way for lack of good material to supply the inner man. We select Sunday for example: breakfast at 8 a.m., consisting of tea, hot rolls and butter, and Irish stew; at 10 a.m., arrowroot and beef tea may be obtained by any that require it; dinner at 1, consisting of pea-soup, roast and boiled beef, with potatoes and bread, and plum pudding; for tea, at 6 p.m., rolls and butter; and at 8 o'clock gruel for supper. On other days of the week the bill of fare is much the same, with the exception of the plum pudding, which is omitted. Salt meat is only given twice a week, but always with a certain proportion of fresh. Irish stew is served out on an average two or three times a week for breakfast, and every day in cold weather. Oatmeal porridge is given in addition twice a week, and on Friday fish is added to the dinner for those whose

consciences require the make-believe of fasting. A sample of the dinner is brought up every day for the purser to taste, and woe betide the unfortunate cook if everything is not up to the mark. We made a point every day of joining the purser in his midday repast on steerage fare, and can testify to the fact that the cooking left nothing to be desired. When we contrast this liberal scale of diet with that which prevailed during the old days of sailing ships, and with the somewhat meagre scale laid down by the law, we may well say of the steerage passenger of the present day that "his lines have fallen to him in pleasant places." We are in a position to assert positively that in all the great Atlantic lines who have characters to maintain, the Government scale of provisions is simply a dead letter, the exclusive use of salt meat is unknown, and the use of weights and measures in apportioning food is a thing of the past, the only limit to quantity being the physical capacity—the amount of available cubic inches of space at the disposal of the recipients. It is, no doubt, a fit and proper thing that a certain amount of salt provisions should be put on board the ship as a stand-by in case of accidents, but, as a matter of fact, the greater portion of it is used up in port by the shore gang, and not by those for whom it is intended.

In spite of all this good fare, however, grumbling is not entirely unknown. For example, we know of a case of a steerage passenger coming to the purser a day after leaving Queenstown, and, being asked what he wanted, said he wanted something to eat on board the ship. On enquiry being made as to why he had received nothing, he replied, he did not know; nothing had been given to him. But, said the purser, did not you hear the bell ringing for meals, and did not you see the other passengers go to get theirs? Oh, yes, he said, but it was not his place to look after his food; it was put on his ticket that it was to be served out to him by the company's servants. So this sea-lawyer had actually gone without his food the whole day because he thought it beneath his dignity to fetch it himself. To show the irresistible propensity of human nature to find fault with something or someone, we will give another illustration, which is a positive fact. The day before the ship's arrival in New York two or three of the passengers,

with an Irishman for spokesman, came aft to complain that, though they had paid their money, they had had none of the "docther's stuff." On being asked if they had been ill—"Not at all," said the Irishman. "Then what have you to complain of?" "Sure, it was the docther's place to find out whether we were ill or not," said he. The doctor was sent for, and, being told the complaint, he examined the leader, and insisted upon it that he was very ill and required some opening medicine. He then fetched a pill containing a dose of croton oil, and made him swallow it. No doubt the cure was effectual.

We will now consider the arrangements at New York for receiving emigrants. After the quarantine officer has been on board to see that there is no contagious disease, the passengers are put into a tender and taken at once to the Castle Gardens Depôt. We landed with them, and can therefore write from personal experience of the routine there exercised.

In 1855 the Commissioners of Emigration leased from the City of New York the wharf and land adjoining the battery, situated at the junction of the east and west river, and enclosed it to form a landing depôt for emigrants, to afford them protection against fraud and extortion from emigrant runners and the sharpers of all descriptions, who are always lying in wait in all large cities to pounce upon the unwary and ignorant, and plunder them to their last shilling. On the 9th of July, 1875, the premises at Castle Gardens were partially burnt down, and a considerable portion of the building destroyed, but the damages were soon repaired, and the building as it now stands is, according to all accounts, superior to the old one, and better adapted for its purposes. It consists mainly of the rotunda, a large spacious and lofty room in the interior of the building. It was once a concert hall, and is larger than St. George's Hall, Liverpool, being capable of accommodating 3,000 emigrants. Besides this hall, there is in the building a temporary hospital, clerks' offices, refreshment room, washing rooms, and a few waiting rooms. On landing, the emigrants are received by the officers of the Emigration Commission, who enter in registers all particulars respecting them, their occupation, destination, age, birth-place, &c. They are then examined

by the medical officers of the establishment to ascertain if any are in such condition of health as to require hospital care. The names of such as have money or letters awaiting them are then called out, and they are put in immediate possession of them. Those who have friends awaiting them are then named, and they are shown into an adjoining room to meet them. Clerks are at hand to write letters in any European language free of all expense, and a telegraph office is situated in the hall. Exchange brokers are present to change coin into the American money at the market value, and a large board is placed in a prominent place showing the fluctuations in the rate of exchange—the broker, moreover, is obliged to give each emigrant a written account of the transaction. A restaurant adjoins the rotunda where refreshments are provided at a fixed and moderate price. Convenient wash rooms are close at hand, and each passenger is requested to make use of them before leaving. Those who wish to depart at once by railroad can now procure passages for any part of the United States or Canada. For this purpose the main lines of the three great railroads, viz. : Erie, the New York Central, and the Pennsylvania Central have offices in the building. After procuring their tickets their luggage is weighed and checked, and a check given to the owner, setting forth the number of his luggage ticket—they are then conveyed by the agent of such railroad to the depôt or steam-boat landing, free of all expense.

Those who wish to remain in the city, and who have no friends to receive them, are now put in communication with boarding-house keepers, who are duly licensed by the Committee, and who are bound to supply board and lodging at a fixed and reasonable price approved by the board. Their houses are kept under constant supervision, and very few complaints are made. Each boarding-house keeper wears a badge, and presents to the emigrant a card setting forth his name and address, and the price charged for board and lodging either by the day or week; he has also to make a daily return of all passengers taken to his house. Those who wish to remain for a few days in the depôt can do so gratis, finding their own bedding, and sleeping on the floor of the rotunda, which is well guarded night and day.

There is a reception hospital at Castle Gardens where all such emigrants are temporarily received and treated till they can be removed to Ward's Island. In charge of this hospital are a resident physician and surgeon, who have moreover to inspect all emigrants on landing, to examine those applying for relief, and to visit sick emigrants in the town. One thousand four hundred and ninety-two persons were treated in this hospital last year, of whom 15 died. Only 10 cases were visited in the city.

We have thus far endeavoured to demonstrate the great advantages provided by this excellent institution for emigrants immediately on their arrival from Europe, the precautions taken to protect them from fraud and robbery, the benefit afforded as a temporary resting-place, and the facilities it offers for forwarding them to their destination; but we have by no means exhausted the sum total of its utility. Not only is it intended to protect emigrants on their first setting foot in America, but its privileges are freely offered to them at any time during the first five years, and these privileges are by no means to be lightly estimated, and may be enumerated as follows:—

By applying at Castle Gardens, any person during this period can obtain temporary relief if unable to procure employment—if such can be treated in the town or received into the hospital at Ward's Island. Many are forwarded to their friends in distant parts of the country, or even have their passage paid the whole or in part back to Europe. It is estimated that during the year 1875 temporary relief was afforded to 10,421 destitute persons, and 1480 were forwarded inland and to Europe at the expense of the Commission.

Perhaps, however, the most useful department attached to Castle Gardens is the labour bureau, where emigrants of both sexes desiring occupation are provided with the same. Employers of labour of any description are here brought in contact, in the waiting-room devoted to the purpose, with emigrants desiring employment, and after making their contracts they leave on record in the office register the particulars of such contract. During the year 1875 employment was provided for 10,215 persons, of whom 5,894 were males and 4,821 females. The great majority of the

males were engaged for agricultural and common labour, whilst the females were all hired as domestic servants. It is stated that at no time was it unable to procure employment of some kind for all who applied, after a few days waiting. Owing to the great depression of trade, however, many who were fit for other avocations were obliged to accept work as ordinary labourers. The wages for common workmen varied from 8 to 15 dollars per month according to the time of year, whilst ordinary domestic helps obtained from 8 to 10 dollars per month, and the better class of competent servants would get from 10 to 16 dollars per month.

After inspecting the premises at Castle Gardens, we were furnished, through the kindness of Mr. Jackson, the secretary, with a letter of introduction to the superintendent of the State Emigrant Refuge and Hospital, Ward's Island. We took a steamer from Fulton's Ferry, enjoying a fine sail of about six miles down the East River, and landed immediately opposite the island, crossing to it in a small steamboat kept for the purpose. On producing our credentials, we were received with great courtesy by Colonel Krehbiel, the superintendent, who forthwith introduced us to the resident surgeon, and by him we were taken all over the establishment. The Commissioners of Emigration began to purchase land and erect buildings on Ward's Island in the year 1847, with the intention of providing accommodation for destitute emigrants, and hospitals for the treatment of the sick. They have now an establishment embracing over 120 acres of land, on which have been erected hospitals, refuge barracks, lunatic asylums, chapel, nursery, school-house, workshops, gas-house, dining-hall, and private residences for the officers connected with it. We were particularly struck with the main hospital, called the Verplanck, which has accommodation for about 500 patients, and which, in all its internal arrangements and sanitary appliances, can hold its own with any in Europe. There are at present nine wards occupied, each ward containing from twenty-six to thirty beds. The wards are large, lofty, and well ventilated, and fitted up with all modern improvements. We noticed, however—as is the case with all American rooms, from private buildings to railway cars—that the temperature was kept a little too high. We cannot help thinking

that our American cousins are a little too lavish in the use of steam-pipes, and that they would preserve their constitutions and their youth a little longer if they did not habitually live in too warm an atmosphere. The Verplanck hospital was intended for all non-contagious diseases, but it is now exclusively reserved for women and children. It includes a lying-in department, in which may be seen "all appliances and means to boot" for assisting Nature at this critical period. Last year no less than 170 women were delivered, and thirteen more were admitted from the city just after confinement; two only of this number died. The hospitals used for men are situated opposite, and consist of five separate buildings, each having a single ward containing about forty beds.

Another building is devoted to the purpose of a nursery and school-house, containing accommodation for 100 children, but at present there are only thirty in the house. The school-room is large and commodious, and a resident school-mistress is in charge "to teach the young idea how to shoot." There is also a very pretty Roman Catholic chapel for the use of emigrants, and a priest resides on the island. The Protestant service is held in one of the empty wards, and a minister comes from the city to officiate and to visit the sick when required.

Next to the Verplanck hospital, the emigrant lunatic asylum is perhaps the finest building belonging to the establishment. It contains wards for both males and females. The patients are classed according to the degree of their insanity; thus the mild cases are in a ward by themselves, the severer ones in another room, and the very violent cases in padded rooms as in similar institutions. There is a very pretty garden in the front of this building which has been laid out by the male patients, who amuse themselves by gardening and outdoor work, the females occupying themselves by sewing, &c. There are fifteen attendants to this asylum. At the time of our visit there were about 150 patients in the house, the males and females being in about equal proportions. On walking through the rooms, we noticed the usual characteristics of insane patients, their symptoms graduating in scale from the acute maniac with destructive tendencies, to the slightly-demented, who talked quite rationally on all but a few subjects.

Probably the great depression of trade during the last few years has had a tendency to foster insanity. Some of the emigrants have found out that they have by no means bettered their condition by coming to a foreign land, that instead of the milk and honey they expected to meet with in this land of Goshen, they had better have been contented with the manna they were fed with in the wilderness they had left. The expected El Dorado has turned out to be a delusion and a snare, and those of weak minds have given way under the knowledge. We found on enquiry, that nearly all the insane patients had been residents in the States for a period varying from one year to four, and only three had been admitted from ship-board.

Another building, consisting of sleeping apartments, dining-room, &c., is used as a refuge for the destitute, where they are boarded and lodged till occupation of some kind can be procured for them. They are employed in any light work there may be on the island, and frequently stay a considerable time, being as may be supposed, chiefly those who resemble the inmates of our own workhouses, and are not fit for much. At the time of our visit there were altogether about 500 emigrants of all descriptions in the island, and we find that during the year 1876, the total number cared for and treated was 4,355; of this number, 3,257 were hospital patients, 249 inmates of the lunatic asylum, and 849 of the refuge. As formerly stated, any emigrant who has been in the States for a period under five years is entitled to admission, provided commutation money has been paid for them. Respecting this commutation money we shall say a few words presently, but before doing so, we will show by statistics furnished to us, the extent of the services rendered by the State Institutions of Castle Gardens and Ward's Island during the last thirty years.

No. of emigrants arrived at the port of New York	
from May 5th, 1847, to December 31st, 1875, for	
whom commutation money was paid	... .. 5,532,808
Of which number the Commissioners of Emigration	
provided and cared for, a greater or less period	
during the five years subsequent to their arrival	1,717,888

As follows :—

Number treated and cared for in the Institutions of the Commissioners of Emigration	547,209
Number supplied temporarily with board and lodging and money relief in the City of New York ...	485,669
Number provided with employment through the labour bureau at Castle Gardens	400,178
Number forwarded from Castle Gardens to destination in United States, and returned to Europe at their own request	58,122
Number relieved and provided for in various countries and institutions at the expense of the Commissioners of Emigration	226,651

It is quite evident that all this represents a considerable amount of money, and we will now consider the question of how the necessary funds have been provided in the past, and how they should be provided in the future. From the month of May, 1847, up to the 20th of March, 1876, the State of New York decreed that the captain or owner of every vessel landing passengers, should give a bond to the State of 800 dollars for each of such passengers, to indemnify every city of the State against any expense they might be put to on his account within five years of his arrival. This bond might, however, be commuted by paying a certain sum, which varied at different periods from $2\frac{1}{2}$ to $1\frac{1}{2}$ dollars, to the Commissioners of Emigration, whose duty was to pay out of this fund the expenses which any city or town in the State might be put to on account of any emigrant. The different steamship companies agreed to commute the bond, and the consequence has been that a certain amount of head-money has been paid, and out of the fund thus raised the expenses of Castle Gardens and Ward's Island have been defrayed. Had the Commissioners been contented with a dollar and a-half head-money, it is probable that it would still have been paid without hesitation, but they wished to enforce a tax of two and a-half dollars, and the consequence has been, that in January, 1876, the legality of this charge was questioned, the whole question was raised, and it was finally decided by the Supreme Court of the United States to be unconsti-

tutional and void. After this decision, head-money was no longer paid, and at the present time there is no fund available to keep up these valuable institutions. A sum of money was voted last year by the State of New York, to assist in defraying expenses *pro tem.*, and a Bill is in preparation for Congress, whereby it is sought to be enacted that the head-money should be rendered compulsory on shipowners. After all the care, labour, and money, which have been expended in order to get the present system to its present state of perfection, and the great benefits derived from it, not only by emigrants themselves, but by the country at large, it will be a most unfortunate thing if it should be allowed to drop through lack of funds, and it is to be hoped that Congress will devise some means to continue it in operation—whether or not by a tax on the shipowners is a different question. No doubt it is a most unfair thing that the State of New York should bear the burden alone. The country at large is benefited by the influx of emigration, which has constituted “the bone and sinew of the United States;” it should, therefore, be made a national end, not merely a local affair. It is the States furthest from the centre which reap most benefit from emigration, the strong, healthy, and most enterprising naturally going farther west, whilst the weak and indolent are left behind. Thus New York may be said to act as a sieve, passing through the wheat and retaining the chaff; and it is certainly not fair that, suffering all the disadvantages, she should bear all the expense. The other States moreover can at any time, under the old system, send back to New York those who, having paid their commutation money, are unable, from sickness or any other cause, to maintain themselves, just as districts in England can send their paupers back to their own parishes. Of course there may be a great many arguments on both sides as to the justice of the capitation grant; it certainly seems rather hard that the tax should fall on the already burdened shipowner as has previously been the case—but need this be so? No doubt intending emigrants, when aware of the advantages to be derived, would not object to pay a small sum, say one dollar, to secure them, any more than they refuse to pay a small yearly sum to their club in the old country. Why not then let the head-

money be paid by the passengers themselves, totally distinct from their passage money, and with a distinct understanding to that effect? As, moreover, the United States themselves are great gainers by the influx of emigrants—as their prosperity and their wealth have been due in a great measure to the continuous stream of foreign muscle—it is only just that in seasons of adversity they should bear, if not all, at least the greatest share of the burdens imposed by a temporary plethora of population. Let them also, then, contribute a yearly sum to maintain these institutions, which will then become like board schools in England, partly supported by the State and partly self-supporting. The Bill that is now about to be introduced to Congress will weigh most oppressively on the shipowner, for not only does it contain clauses to the effect that head-money of two dollars and a-half should be paid by him on account of each passenger, but he is also to be rendered liable to a penalty of 500 dollars if he should land in any of his vessels any emigrant who has been inmate of a prison within a year, or inmate of a workhouse or asylum within six months of the time of embarking for the States. This will be an intolerable grievance, and it is to be hoped that the Bill in its present form will not pass. Whatever means be finally adopted, however, it is greatly to be desired that some solution of the difficulty should be shortly arrived at. We have endeavoured to show the vast amount of good these institutions have done in the past—they have taken care of the stranger, directed him on his way, furnished those unable to procure employment with work, relieved the destitute, healed the sick, and guarded the insane. No doubt the knowledge of the extent of their operations, as it has become gradually diffused through the community, has tended largely to encourage emigration, for it has removed from intending emigrants much of the apprehension they would naturally feel in seeking their fortunes in a strange land, and given them the assurance that, however unfortunate they may be, at all events they will be protected from starvation. It will therefore be not only a misfortune but a disgrace if some means be not devised whereby the establishments at Castle Gardens and Ward's Island may be enabled to continue in the future the good they have effected in the past.

COLLISIONS AT SEA.

(Communicated.)

[Our readers will doubtless be much interested in perusing the following communication, sent to us by a valued contributor. We do not on all points agree with him, and have ventured to insert here and there a few notes, which we trust will be regarded by him in the spirit of friendly criticism in which they have been written. We also append a few remarks by "Our Expert" in such matters, and would submit to our contributor that there are not so many difficulties surrounding the subject as he seems to imagine.—ED.]

"Example is better than precept."

THE following dialogue is intended to illustrate a case of collision between two sailing ships crossing. Similar cases are of frequent occurrence, and, notwithstanding they have been more than once subjected to lengthened and apparently exhaustive inquiries, conflicting opinions on the question still exist.

SCENE.—Examiner's Room, Local Marine Office.

PERSONÆ.

CAPT. SMITH	...	...	...	<i>Examiner.</i>
MR. BROWN	...	...	...	{ <i>A Candidate under Examination.</i>
A HELMSMAN	...	...	...

Ex.—Well, Mr. Brown, I will not detain you any longer to-day. You have answered all my questions on the Lights, the Rule of the Road, and the Regulations* very well.

Cand.—I am very gratified to hear you say so, sir. But, before I go, will you be so kind as to let me have the benefit of your experience on a point which I cannot clearly decide for myself.

Ex.—By all means. What is it? Sit down. Now then.

Cand.—I must ask you, sir, to place yourself (in imagination) by my side on the quarter-deck of a ship, in charge of which I am.

* Regulations for Preventing Collisions at Sea. By Authority. Sixth thousand. Printed under the superintendence of the Stationery Office. 1877. Price One Shilling.

She is a powerful clipper ship, sailing close-hauled on the port tack, with a strong top-gallant breeze blowing and a corresponding sea on. She is under all plain sail, except royals and flying jib, and is going 7 knots an hour on a bowline. It is a dark night, although clear on the horizon.

Ex.—Yes; well. I follow you.

Cand.—Well, sir, I fancy I see a light on the starboard bow. I look carefully with my glasses, and now make out a red light a point or point and a-half on my starboard bow.* Now, sir, what am I to do?

Ex.—Well, you know—

“If to your starboard red appear,
It is your duty to keep clear.”*

Cand.—Yes, sir, I know all that; but what am I to do to keep clear?

Ex.—Well! The vessel on your starboard bow, you see, may be——

Cand.—But I don't see any vessel at all, sir; I only see a red light there. It is still in the same position as when I first discovered it, and it is getting more distinct every minute. We are coming up with it hand-over-fist, sir. There is no time to lose, sir. What am I to do?

Ex.—Well! The light you see may be that of a ship close-hauled on the starboard tack; and you know that, by Article 12 of the Regulations, in that case, “if there is a risk of collision involved, it is your duty to keep out of her way,” and that, by Article 18, it is “her duty to keep on her course.”

Cand.—Oh, by George,† sir, there's risk enough of collision involved; for if she is as you say, sir, and we stand on as we are, we shall run right into her in another five minutes. I can see that by the brightness of the light, though I cannot make out her sails yet.

* No distance is given. How *can* Examiner tell him what to do?—Ed.

† This Examiner is evidently quite at fault here, for he appears to be endeavouring to make Mr. Brown believe that the Article, which the Rules distinctly direct shall apply to two steamships only, applies in the case of a sailing ship seeing a light.—Ed.

‡ No wonder Mr. Brown says “by George,” when the Examiner, after having first given the rule for two *steam* ships, now gives the rule for two *sailing* ships.—Ed.

So here goes; I'll bear up and run to leeward of her. (To the Helmsman.)—Port your helm. Hard a-port.

Helm.—Hard a-port it is, sir.

Cand.—Is she paying off?

Helm.—Yes, sir; slowly.

Cand.—Watch aft. Brail the spanker up. Square* the cross-jack yard. (Watch engaged brailing up spanker, and squaring crossjack yard.)

Ex.—You must not forget, Mr. Brown, that that vessel may be running free; she may even have the wind abaft the beam; and in that case, by Article 12, you know, it is *her* duty to keep clear of you, and by Article 18, your duty to keep your course.

Helm.—(Spanker being by this time in the brails, and the cross-jack yard square.) She's going off fast now, sir.

Cand.—Aye, aye. And if (as you, Captain Smith, have just suggested) that fellow is going free, I am running right across his bows. By Jove, there he is, right on our port bow. I see his hull now, and he is going free; and here he comes right into our port beam.† Crash! crash!! My God, it's all over. The ship's going down under our feet.

Ex.—Steady, steady. Why, Mr. Brown, you are quite excited over your description, as much so as if we really were on board that ship of yours.

Cand.—Thank God, sir, we were not on board that ship, or we should not have been left to sit here in this comfortable room, nor should I have been able to ask you my next question.

Ex.—Which is?

Cand.—How was this collision to have been avoided?

Ex.—Well! you know. If you had not ported, but had stood on, you would have gone clear, as by Article 12, “when the ship

* The Examiner ought to have pulled up Mr. Brown here. He should have given the order “Square in the crossjack yard,” or “Shiver the mizen topsail.” To square it would be to throw his after sails aback, and so hinder the vessel from paying off.—ED.

† That is to say, having first seen Mr. Brown's green light, and then Mr. Brown's red light, the other ship now opposes her green light to the red. But the rules do not require this, either for sailing or steam.—ED.

with the wind on her port side is close hauled," as you were, "and the other ship free," it was your duty so to do.

Cand.—But how was I to know, before I ported, that the other ship was going free? If he had not been, and I *had* stood on, I should likely enough have run into him instead of his running into me. That's all the difference I can see.*

Ex.—Not necessarily; for if he were close-hauled on the other tack, and crossing your track, you would have seen it by the alteration of the bearing of the light.

Cand.—Not necessarily either, sir, begging your pardon, for he may have been close-hauled on the other tack† and yet not crossing my track; if by reason of his being under short canvas, or his being light in ballast, he were going much slower than we were, or making much leeway. Ships you know, Captain Smith, will not unfortunately proceed like the instructions to the Regulations (page 11, paragraph 32), on the assumption that their speed is equal, or nearly equal—so much the worse for the ships. But if, as I said before, that vessel had been making much leeway, or going much slower than we,‡ our lights may have continued on the same relative bearing to each other up to the very point of contact. Indeed, he may have been passing over the ground on a course precisely similar to that which a heavier ship under more sail may have made going free at a faster rate. And now I think of it, if you recollect, sir, that ship's yards *were* sharp up when he struck us, and the collision tore away his port anchor off his fore-castle. So you see, sir, he may not have been running after all; and I may have been doing my duty under Article 12 and have been sent to the bottom all the same.

Ex.—But, my young sir, you forget Article 19, which especially enjoins that "in construing the rules you must pay due regard to "the dangers of navigation, and to any special circumstances which

* But how?—see the diagram of our "Expert."—Ed.

† If he also were close-hauled on the port tack, and a point or a point and a half on the starboard bow of Mr. Brown, the two ships would be running the same course, and the red light would not have been visible to Mr. Brown.—Ed.

‡ Why did not the Examiner remind Mr. Brown of the overtaking rule.—Ed.

"may exist in any particular case rendering a departure from the "rules necessary."

Cand.—No, sir, I don't forget Article 19 ; I only don't see my way to applying it, seeing that up to the last moment there was nothing in this particular case to guide me but a red light on my starboard bow.

Ex.—Well, sir ! and if you will take the trouble to look at No. 44 of the Remarks on the Regulations, page 14, you will see that "It is clear that the action in each case must depend upon the necessities of the case ; that it must be left to the officer in command to do the best under the circumstances of each case ; to recollect that his green light opposed to the red light of another vessel is the one position of danger ; and, above all, to observe due caution." There, sir, that covers all your objections, and is comprehensive enough, I'm sure.*

Cand.—I will not ask you to say more, sir ; but before I leave I must thank you for your condescension and the pains you have taken to explain this to me, which I am sure could not have been done more lucidly by the authors of the Lights and Regulations themselves.

Ex. (soliloquising).—That young whipper-snapper pushed me pretty hard, but I floored him with No. 44—nothing like it. But what the deuce did he mean by that about lucid explanation. Hang it, I begin to think the young rascal was laughing at me after all.

Cand. (re-entering).—There are a few other points about which I should be glad to——

Ex.—No, no. Not to-day. Another time, Mr. Brown.

Cand.—Yes, sir, another time, sir. Thank you, sir. Good day, sir.

In the foregoing sketch, I have endeavoured to illustrate, in a pointed manner, the immense danger a crossing ship incurs when

* But Mr. Brown ought to add mentally, what an odd old gentleman this Examiner is, why he is again trying to make me believe that remarks made solely with reference to two *steam* ships crossing are applicable to two *sailing* ships.—Ed.

taking for its guide the light of the other ship.* It would be doing but scant justice to so important a subject to leave it at this point; and I propose, therefore, in as compressed a space as the question will admit, to examine the existing regulations as to lights and the rules of the road at sea. If in doing this it should appear that the lights as at present used, and the regulations framed for the purpose of utilising them in some sort of systematic way, are (in the positions of greatest danger to ships) not only totally inadequate to insure safety, but even misleading and confusing enough to be themselves a source of danger,—I must not be understood to impute blame to those who have through a long period of years striven to their utmost to make the existing lights serviceable. No human ingenuity could have done this in all cases, and it can be said with truth, that under the circumstances, the best that could be done with them has been done. The existing lights were established, I think, soon after 1850, and before that time side-lights and a masthead light were in use in steamers in India, and they were similar to those now in general use, with the exception that the colours were reversed, the red light being on the starboard side. At that time there was no law on the subject. Even then, however, the weak point of those two coloured side-lights was known, and felt to be, that they were a delusive guide to the direction in which a crossing ship was going. And if in those wide paddle steamers, with the lights outside their paddle boxes, and with the masthead light well forward, there was a palpable difficulty in this respect, how much greater has it become now in narrow screw steamers, some of them carrying the masthead lights almost plumbing the side-lights, and how infinitely greater is it in sailing vessels carrying no masthead light whatsoever? The masthead light, when at a considerable distance a-head of the side-light, is to some extent an indication, by the angle between the two, of the direction in which a vessel is going. What is felt to be wanted is, that the lights should show the *length* and not the *breadth* of a vessel. Lights placed in a line parallel to the keel of a vessel, and of different colours, would, by

* But Article 12, which applies to two sailing ships in this case, makes no mention of lights, nor does Article 17.—Ed.

the angle they subtend, together with the alteration in their bearing, show the direction of a vessel's course and the relative* speed of both vessels. There is no originality in this suggestion ; it was made publicly years since, and has been frequently worked out in detail by seamen. If the sea were like a road, on which vessels would be always moving on parallel or nearly parallel lines, it would be sufficient to point out the breadth of a vessel. And hence it is, that for all purposes of meeting or passing ships, the existing lights as explained by the regulations are of good and sufficient service. There is certainly a want (through the existing lights not being visible from abaft) of some indication to a following ship of the presence of another a-head of it.† But as both vessels would be proceeding in, or nearly in, the same direction, this is very seldom a source of danger. But when we have to deal with ships that are crossing each other, and more especially with sailing ships in this position, we find we are worse than in the dark, and without any guide whatever on which to rely. And this difficulty has evidently been felt in framing the Regulations, for on referring to them, we shall find that of the seven Articles referring to the Rule of the Road (Art. 11, 12, 13, 14, 15, 16, and 17),‡ in six of them the rule of conduct is laid down clearly and concisely "shall do this or that," but in the one position of greatest danger (Art. 12), there is first a rule laid down, then an exception made to it, and next, another rule for vessels under other circumstances ; and the whole is based on the presumption that each vessel is aware of the position and movements of the other, a knowledge, to the attainment of which, the side-light is not by any means a safe guide. Again, the thirteen pages of Sec. 1—Remarks explanatory of the Regulations,—and the five diagrams illustrating them, all relate to steamships only, only by inference can they in certain cases apply to sailing vessels—of which no mention is made. The

* We do not understand this. How would two lights any more than one show the speed of a ship.—ED.

† Our correspondent will see that the new rules provide for exhibiting a white light aft to an overtaking ship. See Parliamentary Papers.—ED.

‡ In Articles 12, 14, 15 and 17, one shall "keep out of the way;" that is all the Rules say.—ED.

seven pages of memoranda, and seven diagrams attached, also refer solely to steamships. The "Aids to Memory," in four verses, are also solely applied to* steamships; and, lastly, the Catechism (Sec. 5) utterly avoids the sailing ship difficulty. Even in relation to steamships when crossing, the existing lights are sometimes a source of difficulty, for a clear exposition of which we have only to refer to the book itself (Sec. 1, page 13, paragraph 42). But as a steamship can move in any direction, without reference to the direction of the wind, the difficulty to a steamship does not often amount to a danger.

Far otherwise is it to a sailing vessel, which is limited to a course on only 20 out of 32 points of the compass. I desire not to be misunderstood, when saying that a steamer can move in any direction, to be supposed to mean that a steamer necessarily can move or turn, much less stop her way, as quickly or freely as a sailing vessel. There are circumstances when a sailing vessel could stop (when close-hauled, for instance) in far less time and space than could a steamship; and a sailing vessel could also often move several points off her course much more readily than a steamship. As, however, she cannot under *every* condition manœuvre with the same facility as a steamship, she is very justly allowed the privilege of inaction. This may be sometimes, however, strained overmuch, as when a sailing vessel takes no measure to avoid a collision when it may be easy to do so, and whilst the steamship is using its utmost endeavours for that purpose. To some minds it amounts to heresy to call in question the perfection of the existing Lights and Regulations, and being as they are so universally adopted, the hopelessness of any alteration has deterred many a thoughtful man from attempting to entertain the subject. Yet thousands of practical seamen bitterly experience that there is a great mistake somewhere, and would rejoice exceedingly to have it remedied. The awful loss of life and property caused by the now frequently occurring collisions is beginning to tell, and, great as

* Very true: and yet our contributor makes his Examiner tell Mr. Brown that par. 44 applies to sailing ships. Why this? when he knows and *now* says it does not.—ED.

the difficulty is of reversing a system long established and universally adopted, it will sooner or later have to be grappled with.

Discussions as to the merits of this or that Rule of the Road are futile, so long as the varying circumstances to which the various rules apply remain unknown to the actors. The existing rules ought to enable the veriest tyro to avoid collision *if he only could see what the other vessel was doing.*

In the most dangerous positions the present lights render no assistance in this respect. Collisions at night almost invariably arise from this doubt existing on the part of those on board one or both vessels.

It is sometimes contended that no system can be perfect, and that the present has as few defects as any which could be suggested to replace it. This is not only an unfair way of meeting a question of such deep importance, but it checks every attempt to devise a more perfect system.

If those who have so long and earnestly striven in vain to render the present system effectual for the prevention of collisions would, at length, accept the fact that it is faulty, and contains in itself elements of danger, short time would elapse before some plan would be discovered by which it would be easy to distinguish the position, course, and speed of a ship by night as readily as by day.

W. P.

Since writing the above, I notice your correspondent Simon Barjona concludes his letter in your December number with the following words :—"I shall be glad if Mr. Martin will find out a position in which two sailing ships can get into collision under my rules." I will venture to suggest one as follows :—A sailing ship close-hauled on the port tack sights a red light, one and a-half points on the starboard bow. What does Simon Barjona rule that she shall do ?

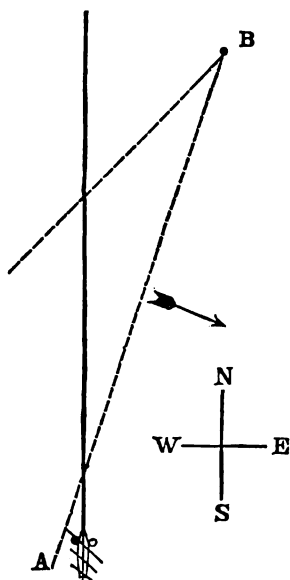
I have purposely avoided giving the position in which the ship carrying the red light may or may not be, as that would be a matter of doubt to the other ship when sighting the light.

It is comparatively easy to frame rules to suit positions on the assumption that both vessels are aware of each other's position and movements. The difficulty in practice is, that they are often in ignorance of these essential elements in the calculation.

The following is the report of our own Expert:—

To the Editor of the "Nautical Magazine."

SIR,—The positions of the two sailing ships referred to in the dialogue



of "W. P." are as shown in this diagram. He tells us A is a square-rigged ship close-hauled on the port tack. She will, therefore, have the wind as shown by the arrow; let me say for convenience (of course any direction would do as well) that the wind is W.N.W. In that case A will be going N. He tells us that the night is dark and clear: that is to say, the very best night for seeing lights; and that A first sees the red light of another sailing ship from 1 to $1\frac{1}{2}$ points on her own starboard bow (I have, therefore, put it at $1\frac{1}{2}$ points). A has a good look out, and we may assume that under the circumstances the red light which we call B is seen by such a smart officer as Mr. Brown, when it ought to be seen

—that is to say, when it is two miles off.

A knows at once, and with certainty, that the direction of the head of B may be S.W., or may be S. by W. $\frac{1}{4}$ W., or somewhere between those courses which I have indicated by dotted lines on my diagram. A knows further that B may be close-hauled on the starboard tack, therefore, A takes care to be ready to keep out of the way, and to show her own red light, if this proves to be the case.

Now as regards B. B, on first seeing A's green light, knows for certainty that A must be close-hauled on the port tack; for if A had the wind but one point forward of the beam, B would see both of the side-lights of A. However, B knows that A must be close-hauled on the port tack. If B is close-hauled on the starboard tack—that is to say, if B is going S.W.—B of course holds

on; and A, seeing that B holds on, ports. If B is free, and showing a red light to A, B will be going S. by W. $\frac{1}{4}$ W.; and, as B sees A's green light a-head, and knows that A *must* be close-hauled, B keeps out of the way by starboarding, if necessary, and shows her green light to A, who immediately knows there is no danger.

If, in the case put by "W. P.," the ship B is close-hauled on the port tack, she must be making the same course as A, and there would be no danger of collision. On one point "W. P." is distinctly wrong, and that is where he says that if B were close-hauled on the port tack, she would show her red light to A. It is not possible, for A would be so far a-stern as to be out of the arc (10 points) covered by the red light of B.

Common sense and accuracy of statement are things to set the case of "W. P." right.

In this report I have assumed that B is square-rigged, but if B is a fore-and-aft craft, she could, of course, approach a little closer to the wind than S.W., in which case there would be no danger of collision at all.

I have the honour to be, Sir, &c.,

YOUR EXPERT.

CUSTOM HOUSES.—VII.

INTIMATELY, though collaterally, connected with the administration of the Customs, is the Warehousing Department of it? On a former occasion the fact was mentioned, and purposely passed over for a more fitting and fuller notice. As it is a kind of branch or wing of the service, a special paragraph or two are not out of place in discussing the matter separately. Its introduction formed a subject of debate, for many years, by some of the foremost intellects of the day. The great object of it, as is, no doubt, generally known, is to secure certain dutiable goods in a warehouse, under the custody of the officials, without payment of duty on importation, thereby enabling merchants to invest more capital in their particular busi-

nesses. The goods may subsequently be taken out in whole or part on payment of the duty, and the privilege is also accorded of removing them from port to port in the United Kingdom, "under bond," and there to be re-warehoused till the transferee finds it convenient to use them and pay the duty. The statesman who had the honour of first proposing such a measure in Parliament was Sir Robert Walpole, in his celebrated Excise Scheme. This was in the year 1733. Singularly enough the same idea filled his head thus long ago as has been agitating the minds of some of our modern legislators, viz., to unite the Customs and Excise Laws, at least, so far as related to wines and tobacco. Sir Robert's proposal was to charge a small duty on importation, and the rest of the tax on removal from the warehouse. With his usual foresight—which is one of the main constituents of genius—he predicted a great advantage to ensue to the carrying trade. His prophetic words were: "I am certain that it will be of great benefit to the revenue, and will tend to make London a free port, and, by consequence, the market of the world." Unhappily, his wise plan was not sanctioned by the then House of Commons. In 1748, Dean Tucker followed in the track of Walpole, in recommending it in his "Essay on the Advantages and Disadvantages which respectively attend Great Britain and France with respect to Trade."

But perhaps the most powerful advocate in stating its claims, and influencing the minds of our legislators, was Adam Smith, in his famous politico-economic work, "An Inquiry into the Nature and Causes of the Wealth of Nations," published first in London in 1776-7. He seems also to have been favourable to a common mode of administration of the two great divisions of revenue. In advocating a warehousing scheme he observed:—"It seems not improbable that a revenue, at least equal to the present net revenue of the Customs, might be drawn from duties upon the importation of only a few sorts of goods of the most general use and consumption, and that the duties of Customs might thus be brought to the same degree of simplicity, certainty, and precision as those of Excise." Speaking of the proposal of Walpole and its defeat, he says:—"Faction, combined with the interest of smuggling merchants, raised so violent, though so unjust, a clamour

against the Bill, that the Minister thought proper to drop it, and, from a dread of exciting a clamour of the same kind, none of his successors have dared to resume the project."

The "project" was, however, again brought forward and passed into law in 1803, by the Act 43 George III., cap. 132, in the schedule to which, certain goods were permitted to be landed and warehoused without the first payment of duties, at the Isle of Dogs, West India Docks, London Docks, &c. The idea of warehousing goods in this way cannot be said to have originated with Walpole, for, as far back as 1664, the famous French statesman, Turgot, introduced it into his country, where the system experienced some vicissitude, for it was abolished, partially, in 1668, and subsequently re-established. Other Continental nations have adopted the plan; and it was advocated in the United States of America in 1842 by the President in his Message to Congress.

One of the arguments used was the novel one of its Republican tendency, in the following remarkable sentence:—"Without it the rich capitalist would possess an almost exclusive monopoly of the import trade and laws, which, designed for the benefit of all, would thus operate for the benefit of a few—a result wholly uncongenial with the spirit of our institutions, and anti-Republican in all its tendencies."

But, probably, the first thought of establishing the system was not due to any one man, or period. Like the apochryphal apple which indicated the discovery of gravitation, it may have been the product of many minds and much thought. It is not at all unlikely to have arisen from the practice of granting the use of "Legal Quays" and "Sufferance Wharves." These may be said to have simply been caused by the growth of trade, and the result of a consensus of commercial opinion. In 1236 the traffic had become so great in London river that the former practice of buying goods on board the importing ships was found inconvenient. Permission was then given to allow the direct landing of cargoes on payment of certain tolls to the Mayor. Hence originated the system of wharfage dues. In 1246 the Corporation of London bought Queenhithe, which, with Billingsgate, were then the only places suitable for landing goods on the banks of the Thames. Owing

to goods being smuggled ashore at unauthorised places, an Act was passed, during the reign of Elizabeth, permitting the discharge of ships, between sunrise and sunset, at open spots to be sanctioned by a Royal Commission empanelled for the purpose; and a list of twenty-two "Legal Quays" was drawn up. As trade increased a number of frontages, laid out by private enterprise, were also allowed the same privilege by a special "Sufferance" granted by the Customs. Hence they were called "Sufferance Wharves;" and they were increased in number as the trade required them. A fair inference is therefore to be drawn from this system of "growth" that the warehousing scheme would arise from the necessities of the case, and its precedent be found in such Governmental privileges. As a proof of the pressure existing in trading circles, and the pinches to which merchants were put, in the year 1613 there was only accommodation in London at the "Legal Quays" for 32,000 hogsheads of sugar, whereas there were 140,000 actually imported. Much of it had to remain in barges on the river at the mercy of thousands of thieves—many of whom were banded together under various designations. In 1797 the Thames Police (formerly the "Marine Police") were established, and recovered no less than £100,000 of stolen property. The estimated amount of loss was stated to be about half-a-million annually, and the loss to the revenue alone, at least, £300,000. Thousands of men were employed to watch the floating property, and of 37,000 persons working on the river, 11,000 were supposed to be thieves or receivers of stolen property. Over 1,600 Customs' officers were required on board the ships arriving and departing. It must be remembered, in order to appreciate this statement, that the tariff of those days was a very extensive one, having hundreds of different assessments, and not like the meagre one of to-day. As many as thirty officials would be required for one "East Indiaman," and for a "West Indiaman" the number varied from seven to twenty attached to the ship. Hence the necessity—the absolute necessity—of the warehousing plan to relieve the pressure upon the time and purse of the merchants. Curiously enough, in four years after the passing of the Warehousing Act, a project was

started (but never carried out) to build docks where the "Commercial Docks" now are, under the auspices of the "Baltic Dock Company," and a concession was actually granted by the Treasury for them to store the imported timber in "Bond," and a notification thereof was sent to the Customs Board. Various Acts, regulating the warehousing system, have been passed from time to time, of which some are—3 and 4 Will. IV., c. 57; 4 and 5 Will. IV., c. 89; 6 and 7 Will. IV., c. 60; Customs Consolidation Act, 1853; and it is now governed by the most recent—the Customs Consolidation Act of 1876. The great advantage of the plan must be obvious, because a merchant dealer in tea, for instance, when the duty was four times the amount which it is now—say, 2s. 8d. per pound—could invest double or more of his capital in prosecuting the business, as the duty was more than equal to the cost. The same may be said of tobacco and spirits in the present day. It is singular that the privilege of extending the scheme to many of the inland towns has not been permitted; and, doubtless, it is owing to the apathy of the traders of those places that it is not done. The extension has received a sanction in regard to four of these towns—namely, Manchester, Leeds, Halifax, and Bradford. Why should not Birmingham, Sheffield, Derby, Nottingham, and others enjoy this privilege? The answer is not far to seek. In the first place, traders do not know of the advantage, or, knowing it, are either too apathetic or engrossed to agitate the question; and, further, the Government are unwilling to incur the expense of a small staff of Customs' officers to look after it. Were the Customs and Inland Revenue united under one Board this difficulty would easily be overcome, by using the two staffs interchangeably; and, no doubt, as the "growth" of trade and opinion proceeds, this will be done by-and-by. So far back as 1840, a Committee of the House of Commons reported:—"That the privilege of having bonding warehouses may be conceded to inland towns, under due restrictions and regulations, with advantage to trade and safety to the revenue." That this prediction was prophetic, may be inferred from the case of Manchester. In the financial year ended March 31, 1858, the amount of Customs' duty collected there was

£116,881; whereas, for the year ended December 31, 1876, it had increased to £200,996, including a sum of £39,011 on British spirits—formerly collected by Inland Revenue officers. This latter arrangement was made by the Act 23 & 24 Vict., cap. 129, and was a decided step in advance. It provided for the reception of British spirits into Customs' warehouses, and has been of great service to the mercantile community. By it, British spirits are permitted to be removed "under bond" from the Excise surveillance to that of the Customs—a "permit" and despatch having to be made out from the one set of officials to the other. The Customs' officers have then to re-gauge and acknowledge the receipt of the goods. As a slight index of the anomaly herein existing it is curious to note that the Excise (or Inland Revenue) men are directed to "gauge" the "ullage" of casks to the quarter of a gallon, and the Customs' to the tenth. In order to fit the operations, it is further directed that the following proportions are to be considered equivalents. The Excise $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ gallons, are to be represented in the Customs' scale by decimals, 0·2, 0·5, and 0·7, respectively. This is a small thing, but it is the straw which shows the direction of the wind; and, surely, one Government in the execution of details, however trifling, ought to have one practice. At the time of the passing of the "Customs Inland Bonding Act," above quoted, it was stated that Manchester was the only inland bonding town existing; but Birmingham, Leeds, and Sheffield were specially mentioned as places which, with others, might thereafter be appointed as warehousing towns at the discretion of the Lords Commissioners of the Treasury. Certain rates, in addition to the Customs' duty, were levied in order to defray the cost of the warehouse rent. For instance, on

Tobacco	...	...	2s. 6d. per £100 duty
Other goods	...	...	5s. " "

The same removed 5s. and 10s. respectively. These charges have been altered since (for details of which see 32 & 33 Vict., cap. 103). Singularly enough, "British Plain Spirits" delivered from Customs' warehouses are exempted from these charges, but "British Compounded Spirits" are chargeable. Another anomaly, which, as Dundreary would say, "no fellah can understand." To

get a clear view of the effect of the general Customs' warehousing powers and privileges, the synopsis, extracted from Mr. Ham's "Revenue and Mercantile *Vade Mecum*," may be useful and interesting, as displaying the anxieties of the Commissioners and the responsibilities of the merchants. It is as follows :—

1. Appointment of warehousing ports ;
2. Approval of warehouses ;
3. Warehouse-keepers' bonds ;
4. Goods may not be removed nor packages altered without sanction ;
5. Bulking, sorting, and packing, &c., of goods ;
6. Goods in the warehouse to be easily accessible ;
7. Goods to be produced when required ;
8. Goods not duly warehoused, concealed, or removed ;
9. Importers clandestinely obtaining access to their goods ;
10. Goods taken out of warehouse without due entry ; goods destroyed or embezzled ;
11. Goods under certain conditions may be taken out of the warehouse and returned ;
12. Goods damaged by fire ;
13. Remission of duty on goods lost or destroyed ;
14. Destruction of goods not worth the duty ;
15. Warehousing illegal packages ;
16. Re-warehousing ;
17. Inspection of stock ;
18. Warehouse-keeper to give a receipt for goods in the Landing Book.

This *resumé* will give a pretty intelligent view of the importance of the warehousing work which is required to be performed, and the convenience, consequent thereon, to the public.

To show the extent of the warehousing system at the present time the following figures, extracted from the Twenty-first Report of the Commissioners of Customs, may be useful. The amount of duty collected, in the year ended 31st December, 1876, on British spirits, entered for home consumption, from the Customs' warehouses was £3,394,895. As a set-off for this, on the reciprocity principle, the Inland Revenue Board collected during

the same period for Customs, the sum of £894,000 on foreign spirits and wines delivered from their custody.

The quantity of British spirits in Customs' warehouses at the end of 1876 was as follows :—

In England	...	...	2,907,354	gallons
„ Scotland	...	...	1,213,226	„
„ Ireland	...	...	2,466,348	„
				<hr/>
Total	...	...	6,586,928	„

The quantities of various articles removed from one port to another under bond for the purpose of being re-warehoused during 1876 were as under :—

Chicory and coffee	...	...	53,674	cwt.
Cocoa	...	...	526,025	lbs.
Dried fruit	...	...	49,875	cwt.
Spirits	...	...	4,537,868	galls.
Tea	...	...	37,732,658	lbs.
Tobacco	...	...	16,173,447	lbs.
Wine	...	...	2,185,281	galls.

These numbers show a decent amount of trading facility, which, without the privileges of the Warehousing Act, would be “cribbed, cabined, and confined” in those particular branches of business. As a partial index of the work done by some of the officials, the following numbers of documents prepared at the London warehousing offices, in 1876, will show the extent of the official labour :—

Tea Office...	...	...	...	678,957
Legal Quays	...	...	...	352,470
London Docks	...	...	...	87,635
West India Docks	...	...	...	33,582
St. Katharine Docks	...	...	...	24,008

1,176,652

The officials employed in those offices, and in the work indicated above, are 269 in number, whose salaries, according to the Civil

Service Estimates, for the year ending 31st March, 1878, amount to £58,830. This sum, and these officers, are, of course, only a part of the total number employed in "Warehousing" work throughout the kingdom, and even in the Custom House in London. To give an accurate account of all of them would require much searching analysis, and allocation of expense, from a variety of staffs. This is owing to the warehousing system being so intimately interwoven with the details of work in other branches. Of such are the Statistical Department, where all warehousing and other "entries" are checked; the "Long Room," where the cash for those entries is taken; and the various Custom Houses throughout the kingdom; so that to obtain such an account an estimate of the time of each officer who is at all connected with the warehousing work would have to be made.

A review of this article will show that the "Warehousing system" has probably arisen from a "growth" of opinion, and necessity compelling it, as it were: that it first engaged the attention of some of our great thinkers, who foretold the advantages of it: that the "system" has, since its introduction, been of great benefit to the mercantile community: and that its "growth" seems undoubted still, for it has extended in quantity of business; also, its extension has been from the seaport to the inland towns, and from the Customs to the Excise, and *vice versa*. That the "growth" of opinion in its favour and expansion will still proceed it needs no prophet to foretell. The development of British trade will render every facility necessary, a necessity. As Herbert Spencer says, the law seems universal that there is always going on a transformation from indefinite, incoherent homogeneity, to a definite, coherent heterogeneity. This idea of "evolution" may creep into official circles. If so, it is then a foregone conclusion that the "development" of the Warehousing plan, with its ramifications extending into both of the great branches of revenue, will form a gradually strengthening link between them; binding the two services and so blending them, that an Act of Parliament will simply be required to formally join that which will have become *un fait accompli*, on the principle of "growth" above alluded to. This

union is no new thing, as witness the evidence given before the Select Committee of 1862-3 upon the question of amalgamating the Customs and Inland Revenue. At question 1090 (Minutes of 1863), Mr. Duncan McLaren, M.P. for Edinburgh, was asked: "Are you aware whether the facilities which have been afforded by inland bonding has led to increased consumption?" He replied: "I have no doubt it has, as it has diminished the cost of the article. At one time, the whole of the duties on tea had to be paid in London, and there was no bonding at all; the consequence of which was, that the wholesale and retail dealers had to lie out of the duty to a much larger amount than they now have, and, therefore, as a matter of course, they required a larger profit." Q. 1091. "If the effect has been to reduce the cost of tea, it is natural to suppose that it will have the effect of increasing the consumption of it?"—A. "I think so." Q. 1092. "Consequently a judicious extension of the facilities and conveniences afforded by inland bonding must benefit the revenue?"—A. "Certainly."

The extension of the warehousing system to many other places, and the development of its privileges by simplifying the official regulations, especially as between the Excise and Customs, will not only develope trade and increase the revenue, but it will have the effect of decreasing expenditure. For instance, in the case of Manchester, the Customs' staff is estimated to cost £1,954 for the year 31st March next. Now, if the custody of the warehoused goods were transferred to the Excise, or an amalgamation of duties were effected by a junction of the two departments, the presumption is that all or nearly all the above sum would be saved. As a proof of this, nearly a million was collected by the Inland Revenue officers last year for the Customs on foreign wines and spirits, *ex* the warehouses of the former; and there is no allegation made that any increased staff was required for the purpose. At all events, it is abundantly manifest to every reasonable mind, that all the numerous forms, both of kind and degree, which are required in communicating between the two sets of officials, would be swept away; and, consequently, all the labour necessitated thereby.

THE PORT OF LISBON.

THE position of Lisbon has naturally rendered it a commercial city, equalling Naples amongst European cities for beauty of situation, and acknowledging Constantinople alone as its superior. The expansion of the Tagus at this point to a width of nine miles forms one of the finest havens in the world. The quays for landing and embarking, which extend nearly two and a-half miles along the banks, form a beautiful promenade, and the entrance of the river below the city is guarded by a series of forts on either side. Fort St. Julian, built on a steep projecting rock, marks the north entrance of the Tagus, and on it is a lighthouse, rising 120 feet above the sea level. Two large banks, called the north and south Cachops, obstruct the river mouth, and on the middle of the latter stands the Bugio fort and lighthouse, the latter being sixty-six feet high. The least depth of water on the bar in the north channel is four fathoms, and in the south six fathoms; and there is little danger in entering the port, except during ebb tides, which run out at the rate of seven miles an hour. Inside the harbour the water, from nearly twenty fathoms in mid-channel, shoals gradually to the edge; but in some parts vessels may come within 200 yards of the shore.

The buildings appear to rise gradually from the water, and present a magnificent and imposing appearance; but when the traveller has landed, the delusion vanishes. The ancient walls and towers that enclosed the old town still remain, but fallen to decay, and the avenues in this part of the city are narrow, gloomy, and unwholesome. The new town, which arose from the ruins caused by the earthquake in 1755, includes many wide and handsome streets, regularly paved and furnished with footpaths. Lisbon is divided into districts, which can be examined separately—Alfama, Mouraria, Rocio, Bairro-Alto, Santa Catherina, and Belem. The first comprises all that lies to the east of the Rua Magdalena, and contains the Sê, the Castello de S. Jorge, S. Vicente de Fora, Graça, N. S. do Monte, the Hospital of S. José,

and Campo Santa Anna. The streets of the Alfama, between the castle and the river, which surround the *Sê*, are the oldest and dirtiest, this part having suffered comparatively little in the great earthquake. The hills in the northern portion of this section are the highest in Lisbon. To the west of this division, and on the low ground, is the new part, built subsequently to the earthquake, which here exerted its greatest strength. It contains the *Praça do Commercio* (generally called by Englishmen Black Horse Square), the *Alfandega*, and the arsenal, with the block of regularly-built streets to the north, the *Rocio*, *Theatro D. Maria*, *Praça da Figueira*, and *Passeio Publico*. To the west again of this is an intricate mass of streets extending nearly from the river to the *Largo do Rato* on the north, and to the *Rua de S. Bento* on the west. This section contains the *Bibliotheca Nacional*, the *Carmo*, the *Chiado* (the most fashionable street), *N. S. de Loreto*, some of the principal hotels, the *Opera*, the *Correio*, and the *Royal Academy of Sciences*. Still further to the west is the district of *Buenos Ayres*, the residence of the ambassadors. It is crowned by the *Estrella*, having the English chapel to the north, to the extreme west the *Necessidades Palace*, and to the east the *Cortes*. *Belem*, with its tower and convent, and the *Ajuda Palace*, forms the fifth quarter.

One of the largest squares is the *Praça do Commercio*, in the centre of which is the equestrian statue, in bronze, of *Joseph I.* The front, towards the river, is open, and flights of stone steps descend from it to the water; on the east side are the custom-house, *East India House*, and exchange; the public library is on the west side, and facing the river stands a fine building called the *Junta do Commercio*. The *Rocio* is another fine square, communicating with that last-mentioned by several well-built and uniform streets. According to the plan approved by the *Marquis of Pombal*, and prepared by his order, for the re-building of Lisbon after the great earthquake, it was intended that each trade should occupy its own street in the lower part of the city. This arrangement still continues, although no longer enforced by law. Of these streets, one, the *Rua d'Oro*, is chiefly occupied by goldsmiths and jewellers; the silversmiths live in the *Rua da Prata*,

and a third is filled with the shops of cloth merchants and embroiderers. The haberdashers and other tradesmen have likewise their streets, called after the trade to which they are appropriated. The chief market is the Praça da Figueira, near the Rocio, for fruit, vegetables, plants, seeds, fish, and poultry. By the river side, to the west of the Caes do Sodré, is the Ribeira Nova, the fish-market, which comprises an extensive range of buildings and shops.

The population, about 275,000 in number, is of an extremely varied character; nearly a third of the lower orders are Gallegos, blacks, or mulattoes, who, though the worst used and least considered, have a just claim to rank as the most hardy and industrious people of the capital. In 1807, the French army, under Turcot, occupied the city for a short time after their defeat at Vimiera; but they were soon driven from it by the combined Anglo-Portuguese army. Lord Wellington, in the same year, fortified the famous lines of Torres Vedras, which, in 1809, proved a sufficient defence against a fresh invasion of the French, under Massena.

The earliest records of the transactions between Great Britain and Portugal, at the beginning of the century, show that a very considerable trade has always existed between the two countries, that Great Britain was Portugal's best customer and largest purveyor. In the year 1806, the total of the imports and exports was £8,766,294, of which £3,265,742 were with Great Britain; subsequently, for the six years 1861 to 1869, the proportion had greatly increased. The total of Portuguese trade was sixty millions sterling, of which thirty-one millions represent the results of British enterprise. From the proceedings of the Lisbon Factory we glean that a century and a-half ago the principal British goods imported into Portugal were beef and pork, salt fish, corn, rice, coals, leather, staves, timber, bees' wax, iron, lead, shot, woollens, linens, and silks; and the principal exports from Portugal to Great Britain were salt, wine, and oil; a description of the trade which, with a few modifications, is applicable at the present day.

Comparative tables of the imports and exports through the Lisbon Custom-house for the years 1870 and 1871 were published for the first time at the beginning of 1872, they having been pre-

viously submerged in the general accounts of the kingdom. These statistics have become doubly valuable, showing as they do an increase in the Customs' receipts, the result of the operation of the various treaties of commerce which Portugal has signed during the last few years with France, Germany, Austro-Hungary, Italy, and Spain. The largest proportion of the imports consist of woollens, cottons, linens, metals, minerals, fish, Colonial produce, wool, and skins. The imports of coal into Lisbon average from 160,000 to 170,000 tons a-year. There is always a considerable importation of bread stuffs, due to the fact, viz., that Portugal does not grow, and has not grown within living memory, enough corn for her own consumption. The total value of merchandise brought into the port of Lisbon in 1870 was £2,094,812, and subsequently in 1876 this had increased to £3,522,954. It is satisfactory to observe at the same time that Great Britain still furnished considerably more than half the total imports of all countries into Lisbon, and nearly three times the amount imported from France. The principal exports consist of olive and palm oils, potatoes, onions, wax, cork, elephants' teeth, oranges and other fruits, honey, cattle, manganese, salt, wine, &c. The exports of salt were in 1871, 114,000,000 of litres, and in 1876, 225,000,000; of wine 21,000 pipes and 38,000 pipes; of minerals 44,000 tons, and in 1876 233,000 tons. The total value of merchandise exported in 1870 was £1,246,718, and in 1876 £1,757,391. The decrease observable in the exports of 1876 compared with the previous year, is due to transitory causes, among which the drought and failure of crops in Algarve must claim an important place. The steady increase of the imports is to be ascribed to two causes, which it is hoped will be continuous in their operation, viz., the growing wealth of the country, and the more liberal fiscal policy evidenced by the treaties of commerce entered into by Portugal of late years with the other European powers. Much remains to be done in this latter direction, but the good effects already secured are visible, not only in the progressive augmentation of the contribution made to the public revenue by the Customs' duties, but by the number of articles of necessity or luxury, unattainable in Lisbon ten years ago, but

now to be seen in every shop window at prices not appreciably higher than in other ports of Europe.

This survey of the past and present condition of British trade with the port of Lisbon, for which we are chiefly indebted to the series of reports by Consul Brackenbury, would be incomplete without a brief glance at the means of transport by which the interchange of commodities between the two countries is and has been effected. This interchange has taken place for many years past in English bottoms, which have long had the preference in the indirect as well as in the direct trade, notwithstanding the fact that vessels employed in the former branch have been, until somewhat recently, weighted with a differential duty of one-fifth over and above the ordinary import duties. This differential duty was abolished, as regards all countries which do not levy any analogous duty, by a decree of the 22nd December, 1870, to the advantages of which we are, of course, entitled.

From the Portuguese general statistics for the year 1869, showing the number and tonnage of British and foreign vessels which entered the Tagus in that year, it appears that not only did the British ships slightly outnumber the foreign, but that their aggregate tonnage more nearly doubled than trebled that of their rivals. In 1870, out of 1,900 ships which arrived at Lisbon, 1,056 were British, with a still larger disproportion in the tonnage, and the increase of British steam traffic to this port has continued steadily until the present time, and shows no symptom of ceasing.

FEES ON ENGAGEMENT AND DISCHARGE OF SEAMEN.



N official notice appears in our advertisement pages, which is as follows :—

“FEES ON ENGAGEMENT AND DISCHARGE.—The present practice of exempting ships which have paid engagement and discharge fees twice in the same year, from further payments during that year, results in an important deficiency in annual income, and every engagement or discharge

causes expense to the Mercantile Marine Office. The Board of Trade therefore give notice that on and after the 1st January, 1878, exemption from further payment will only be made in the case of ships which have paid the engagement and discharge tonnage fees *four times* in the year 1878, that is, eight fees in all ; and that on and after the 1st January, 1879, the fee will be chargeable on every engagement and discharge.—T. H. FARRER, Secretary.—Thomas Gray, R. G. C. Hamilton, Assistant-Secretaries.—13th October, 1877."

The Sections of the Merchant Shipping Acts applicable to this case are the following:—Sections 125, 126, 150, 151, 154, and 155, of 1854 ; and Section 7 of 1873.

We reprint Sections 125, 126, and 154 :—

" 125. Such fees, not exceeding the sums specified in the table marked P in the Schedule hereto, as are from time to time fixed by the Board of Trade, shall be payable upon all engagements and discharges effected before shipping-masters as hereinafter mentioned, and the Board of Trade shall cause scales of the fees payable for the time being to be prepared and to be conspicuously placed in the shipping offices ; and all shipping masters, their deputies, clerks, and servants, may refuse to proceed with any engagement or discharge unless the fees payable thereon are first paid.

" 126. Every owner or master of a ship engaging or discharging any seamen or seaman in a shipping office or before a shipping-master, shall pay to the shipping-master the whole of the fees hereby made payable in respect of such engagement or discharge, and may, for the purpose of in part reimbursing himself, deduct in respect of each such engagement or discharge from the wages of all persons (except apprentices) so engaged or discharged, and retain any sums not exceeding the sums specified in that behalf in the table marked Q in the Schedule hereto ; provided that, if in any cases the sums which the owner is so entitled to deduct exceed the amount of the fee payable by him, such excess shall be paid by him to the shipping-master in addition to such fee."

" 154. For the purpose of determining the fees to be paid upon the engagement and discharge of seamen belonging to foreign-going ships which have running agreements as aforesaid, the crew

shall be considered to be engaged when the agreement is first signed, and to be discharged when the agreement finally terminates, and all intermediate engagements and discharges shall be considered to be engagements and discharges of single seamen."

The above being the circular and the statutory enactments, we next point out the practice :—

First. The shipowner pays the fee for the whole engagement of the crews. That fee is settled by the tonnage of the ship. See Table P in the Schedule.

Secondly. The shipowner then obtains a contribution from each person, except the master and apprentices. The officers and petty officers reimburse him to the extent of 1s. 6d. each, and seamen to the extent of 1s. each.

Thirdly. It often happens that the contributions of the men go far to repay the whole fee to the shipowner. In many cases they make up the whole fee, and in some cases they exceed the whole fee by amounts varying from 1s. to 60s. This excess does not go into the pocket of the shipowner, but is paid to the Mercantile Marine Fund.

Fourthly. In the case of men engaged separately, a separate fee of 2s. has to be paid by the shipowner, of which he is entitled to obtain repayment of 1s., or 1s. 6d., from the person engaged, as the case may be.

As regards fees for the discharge of seamen, the payments by the shipowner and the repayments to him by the seaman are similar in amount.

It is clear from the above that seamen are liable to pay 1s. 6d. or 1s. every time a fee is demanded by the superintendent on engagement or discharge before him; and it is also clear that in no case will the owner bear all the expense of the engagement or discharge of the crew, whilst in some cases he bears very little, and in others none at all.

The Board of Trade have for some years been in the habit of making a very great concession to shipowners and seamen, inasmuch as, although the Act provides that the fees we have named above shall be paid on each engagement and discharge of a foreign-going ship's crew, the Board have required no payment after the

engagement fee and the discharge fee had been paid twice each in one year, in respect of the same ship. This was, perhaps, a greater concession to the shipowner than to the seaman, for if the seaman engaged twice over in one ship, and for the third engaged in another ship which had not already paid two engagement fees, he would have to contribute again, although he may have paid two such fees already; while the owner of the ship he has left may have paid nothing.

Many of our readers must have been struck, as we have been, with the rapid advances and improvements made in, and the greatly increased facilities afforded at, Mercantile Marine offices. To put the case mildly, it would seem that the Board of Trade have in this matter overrun the constable, and are now in a position which compels them to abrogate some of the concessions they had formerly made. We accordingly find that the superintendents, instead of engaging and discharging *whole* crews for nothing after the second time in any one year, will not engage them or discharge them for nothing until after the fourth time. If that does not bring in enough revenue (and we sincerely hope it will), then the Board of Trade give notice that all exemptions will cease in 1879.

It is always hard to increase fees, but it is still harder to keep a large staff at the out-ports working for nothing. The Board of Trade abridgement in effect points out that the cost to the community, and the time and trouble of engaging a whole crew for a fifth voyage, are just as much as the engagement for a first voyage, and ought in justice to be paid for equally. This is unanswerable in principle, and we would suggest that the equitable way would be to reduce the fees for each engagement and discharge all round, and equalize the contribution of owners and seamen respectively, and then charge on every occasion.

The only further observation we have to make is that the new circular does not apply (as some of our correspondents seem to think it does) to any case in which the law does not require the agreement to be made before a superintendent of a Mercantile Marine office; that it does not necessitate any more frequent engagements or discharges; and that it in no respect alters the case of seamen shipped and discharged separately.

THE LAW OF PILOTAGE.

WHETHER the approaching Session of Parliament may witness an alteration in our Law of Pilotage remains to be seen, but it is tolerably certain the change is one which cannot be much longer deferred. When in 1854 a very meritorious effort was made to consolidate our Law of Merchant Shipping, the framers of the Statute passed in that year were met by a special difficulty in dealing with the subject of pilotage. Long previous to the passing of the Merchant Shipping Act (17 and 18 Vic., c. 104) pilotage had been compulsory in the districts of the Trinity House and the Cinque Ports, in the Bristol Channel, the Clyde, and elsewhere, but the exemptions from compulsory pilotage had co-existed with the compulsory system, and as other exemptions were contemplated the difficulty was how to reconcile the compulsory system with the extended system of exemptions, so as to produce neither conflict nor confusion. It cannot be said that this difficulty has been successfully overcome. By Section 353 of the Act of 1854 all exemptions from compulsory pilotage then existing were continued, and by Section 379, a number of exemptions are specified, some of them pre-existing. But while Section 353 confirms the previous exemptions from compulsory pilotage, it gives to licensed pilots the power of superseding unqualified men in compulsory pilotage waters, even in exempted ships. Then there is the 388th Section, re-enacting a provision of the 6th Geo. IV., c. 125, s. 55, whereby "no owner or master of any ship shall be answerable to any person whatever for any loss or damage occasioned by the fault or incapacity of any qualified pilot acting in charge of such ship within any district where the employment of such pilot is compulsory by law." The provisions of these three sections have given our courts of law, and especially our Admiralty Court, endless trouble. If the exemptions from compulsory pilotage are continued, will the presence of a licensed pilot on board an exempted ship, of which he has insisted upon his right to take charge, limit the liability of the owner or master of that ship?

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Yet the principle on which this limitation of liability rests, is rational and equitable. "This exemption," observed Dr. Lushington in the case of the *Protector*, "in favour of the owners, is undoubtedly a departure from the general law, as it formerly prevailed in this country; but the principle upon which it is founded, is just and reasonable. Where the appointment rests with the owner himself, as in the case of the master and crew, it is reasonable that he should be held responsible for their acts, who are agents selected by himself; and he is bound to provide persons of adequate skill, diligence, and sobriety. But where a person is compulsorily put on board the vessel, and the owner's authority is superseded by legislative enactment, it would be a violation of all justice to hold such owner responsible for the skill, sobriety, and caution of a person with respect to whom he has no power of selection, whose qualifications he has no opportunity of deciding upon, but which are to be ascertained and determined by others, the owner himself being entirely debarred from any possibility of interference." This argument in support of the provisions of Section 988 is unanswerable. So long as compulsory pilotage is retained, it must, in common justice, be associated with the limitation of the owner's liability for loss or damage occasioned by the pilot. Of course that limitation, involving as it does a departure from the common law, can only cease with the compulsory system. Again, by Section 361, an unqualified pilot is prohibited, under a heavy penalty, from continuing in charge after a qualified pilot has offered to take charge; but the following Section (362) sets out a variety of apparent exceptions to this rule—as where a ship is in distress, or where no qualified pilot has made a signal or offered to take charge, or for the purpose of changing moorings or taking a ship into or out of dock. How these provisions may be misunderstood the records of our police courts will show. It is still a moot point, awaiting the decision of a superior court of law, whether the provisions of Section 362 avail against the rights and privileges of licensed pilots. Now, it is obvious that all these difficulties in the working of the law of pilotage, to which we have directed attention, can only disappear with the abolition of compulsory pilotage. On the

policy of such an abolition there has been a diversity of opinion, but there are not wanting indications of a gradually increasing feeling against the compulsory system. The main argument in favour of this system has been, that it ensures a supply of competent pilots always ready for their work, but this argument was met and disposed of by the evidence taken before the Merchant Shipping Committee of 1859-60; that Committee in their report advocated the voluntary in preference to the compulsory system. Whether the system of compulsory pilotage has ensured an adequate supply of pilots always attentive to their duties and ready for ships requiring them, is a question which it is needless to discuss. The constant complaints of shipmasters, and the too frequent casualties occurring in compulsory pilotage waters to ships wanting pilots, supply the answer. But there is a further indication that compulsory pilotage is doomed, and that its abolition is but a question of time. The Legislature, acting upon the suggestion of the Committee above referred to, introduced into the Merchant Shipping Amendment Act of 1862 a provision for establishing new pilotage districts, but so that the pilotage in the new districts should be voluntary, and this provision has been adopted in the pilotage districts created within the past sixteen years on the North East Coast and in the Bristol Channel. Later still, and indeed recently, the Trinity House applied for an Order in Council authorising the granting of licenses to pilots for exempted ships in the London district. This partial opening of pilotage in a district where it had been theretofore a close monopoly, seems to foreshadow a further and more extensive reform in our Law of Pilotage, which probably only the pressure of more urgent questions relating to merchant shipping has prevented assuming a more definite shape. But whatever changes may be proposed in our pilotage system will not be the result of any defects in the administration of that system. Our pilotage authorities have discharged the trust committed to them with energy and effect. The defects are those of the law itself, not of those whose business it is to put it in force, and to cure those defects will, of course, be the business of the Legislature, acting at the suggestion of the Government.

A DROP OF WATER AND ITS SKIN.

OME of us may have seen the skins in which, some fifteen years ago, a Viceroy had water brought for his use all the way from the Nile to England, and many of our readers must have often seen abroad skins used for the carriage of water and of wine. The new bottles for new wine, is, of course, known to all of us who have attended Sunday School—meaning really new skins for new wine. In England skins for water are never used but under very exceptional circumstances, as that above noted. Few of our readers, perhaps, are aware that they see every day water carried in skins; skins transparent as the water they surround,—skins of great tenacity, always tightly drawn over their contents,—self-made skins, without a seam, and ever adapting themselves to the changing form of the liquid volumes whose envelopes they are, reefing and unreefing their spread-out surfaces without ever a fold or a crease, patching themselves where letting out is necessary without ever a patch, so woven are they that they are perfectly elastic; they are very strong and yet weak as water, for their substance is water and only water.

“Devoutly look, and nought but wonders shall pass by thee;” so is it written in the “Wisdom of the Brahmin.” A blind philosopher, sitting in darkness, devoutly looking at the wonders which were passing by before his inner sight, saw more of the nature of the skin of water than any man with outer sight had then discovered. From his brilliantly lighted up palace of darkness he described his vision to those who had the perception of outer light, and he directed them how to make a series of beautiful experiments that they might verify by their outer vision what he had beheld by his inner sight. These experiments have been repeated by Tyndall at the Royal Institution, London, and by other Tyndalls at other places, and as the lookers-on gaze and admire, they are told how a blind man was the first to see it all.

A drop of water, be it rain or dew, is spherical when not constrained by outer force. Why does it come with roundness,

ever and ever seeking to become more perfectly a sphere? It is because the liquid water weaves its surface molecules into a skin of greater density, drawn tightly over its mass, to force its volume to the shape which gives, with least of surface, most of space. Within that outer film, the pressure on the surfaces of molecules mounts up to near 5,000 atmospheres, and yet, so thin is the film, that, on an inch of length, the force amounts to but the one hundred and thirty-fifth part of an ounce.

The cause of this phenomenon is that the central forces of the exterior molecules at a free surface have their resultant greater in the direction of that surface. It is this surface tension, as it is called, that gives to a soap bubble its strength, for there are two surfaces in that film and a double tension therefore for it. This skin or tension film is found on every drop of rain or dew, and on every vesicle of aqueous mist or cloud. The rainbow tells us that in the falling shower on which its colours are spread out, each aqueous point is a perfect sphere. The bubbles formed within a liquid have the film internal now seeking to collapse itself, and only stretched by the expansive force of gas, or air, or steam imprisoned in it. The bubbles on the surface of the sea are formed of air caught in the water and now compressed by force of surface tension, so that the air within has always greater density than that without.

When this subject was illustrated by the experiments of Plateau and Tyndall, by Tyndall at the Royal Institution about two years ago, the condition of surface tension was shown on a large scale. A jet of water was made to issue from the top of a small vertical pipe; on the top of it, just above the orifice, there was a small disc of metal so close to the end of the pipe that the water issued as a thin sheet in the form of an opened umbrella. According to the theory of water skin or surface tension this thin sheet of water had a skin on each side trying to contract the area of the surface. If there were no contractile skin upon this water umbrella the curve which the discharge from the jet would trace in space would be the same as that which sand or small stones would describe. The curve would be continually bending down, always becoming more nearly

perpendicular, but, if in vacuum, it never could come quite to that; and even in the air it could not be brought inclined within the upright. If, however, there be a surface skin seeking to contract the sheet, of always the same force, whatever be the thickness of the sheet, the result would be as if cords were tied round the top of the umbrella frame, and, by tightening these, an attempt were made to close the umbrella without pulling down the frame.

Just that result was produced by Professor Tyndall. He explained that even the umbrella shape at first was more curved in than was due to gravity and force of expulsion, if all the molecules came out as independent little bullets, each to describe a trajectory, independent of its fellows. He then, by modifying the pressure, caused what had been like the umbrella tips to curve in more and more, until they closed quite round the pipe—a sheet, unbroken, pear-shaped, say, 18 inches high, and nearly 12 inches in diameter.

When a jet of water issues downwards from a cistern, the water, if in separate molecules, should fall as wafer layers of water-dust, each layer widening the distance between it and the one above it as they fall and gain increased velocity. If, however, there be a tight skin over the water, this will apply a slight constraint, retaining the water molecules, as it were, in an extensible bag, which would to a certain extent accommodate itself to the increasing speed of the falling water, until the contractile force of the film, conspiring with the increasing velocity of the lower part of the jet, overcomes the longitudinal pull of the skin, and an elongated drop, pear-shaped, shapes off, and then the film contracts to form it spherical; but, the elastic film contracting quickly, compels the water it contains to pass the sphere in form and to become oblate and reach a form unstable, and then the form returns to spherical, and passes that to be prolate and back again, each palpitation having less and less departure from the sphere at which it aims.

As each drop in succession breaks off at nearly the same point of height, and as each has to pass at equal speed through all the phases of the palpitation, it comes about that if we could look at the falling stream for but one instant, the drops would then be seen

to rank in sets, from spindle shape to melon shape, and back again. Plateau saw this, though blind, and told his men how they could see them too, as Tyndall at his lectures has done since. When the jet falls in a darkened room, and then is brilliantly lighted up for but an instant by one flash of the electric light, the image made upon the retina bides for the tenth part of one second, and is remembered as a string of crystal beads, in several sets, succeeding one another in regular order, as if arranged by infant hands for ornament. These drops are now called "Plateau's beads." He saw them first who never saw them yet.

A soap-bubble is an exhibition of surface tension; and from the known length of waves of light for different colours the thickness of the film can be measured according to the colours it reflects. From this experiment a thickness and a tension are arrived at, and therefrom the work is calculated that would draw out a pound of water into film as thin. It is already known what work is needed in its heat equivalent to draw asunder a pound of water into its separate molecules, and this is much greater than the other. It is then a question in simple arithmetic, if so much work pulls a pound of water into a film which does not exceed $\frac{1}{136,000}$ th of an inch in thickness, then to what thinness will the greater amount of work draw it out? The answer comes out, the one five hundred millionth part of an inch. From other considerations the size of a molecule of water is believed to be not more than the $\frac{1}{250,000,000}$ th and not less than the $\frac{1}{3,000,000,000}$ th of an inch. A number used as probably near enough for illustration is the $\frac{1}{1,000,000,000}$ th of an inch. According to this conclusion the number of separate molecules in a drop of water $\frac{1}{10}$ th of inch in diameter is 100,000,000 in one diameter, or $5236 \times 100,000,000$, that is, 523,600,000,000,000,000,000 separate molecules. This number is so great, that if little imps were set tasks in the next world to put the finishing touches upon water molecules, and were taught how to complete them at the rate of one million molecules per second, it would take one imp working incessantly for seventeen billions of years to make one rain drop the one-tenth of one inch in diameter. We do not know what is the size of one of these molecules; we conclude only upon the

grounds stated, that the standing room for one of them in a drop of water is not greater than what has just been calculated. When matter is so cut up into minute particles, there is an enormous increase of the aggregate surface of the molecules.

These molecules are not in absolute contact, but supposing them to be of the magnitude which they would have if in contact, the aggregate surface in the rain drop $\frac{1}{10}$ th of an inch in diameter would be equal to 6,000 square feet.

We do not know how mind stores up its memories, nor in what short hand and marks indelible the records are kept, but since one drop of water has a surface of such magnitude, that, if inscribed in microscopic photographic characters of equal size with those in which a bank note can be read (in area a small pin-head) upon a slide for microscope inspection, the printed books of all the world might find their place and still leave millions blank, who then shall fear that the mind's records which make up man's identity, cannot be stored away imperishable although unseen.

THE PORTS OF SAVANNAH AND PORT ROYAL.



THE Manager of the Salvage Association of Liverpool, has kindly forwarded to us the following report made by Captain Stark, one of their officers, who has recently visited Savannah and Port Royal :—

SAVANNAH.—This port is considered to be the second cotton port in the United States. The sea approach is one of the easiest on the whole southern coast, the depth on the bar at mean low tide being 19 feet, with a rise of 7 feet, so that vessels can carry 26 feet of water to a safe anchorage inside the bar ; 24 feet to Tybee, and 17 feet to the town, which is distant from Tybee 18 miles. Vessels load alongside the wharves until they draw 16½ or 17 feet, when they proceed down the river to Venus point—distant from Savannah 9 miles, where they load up to 19½ ft. draft, and they then proceed to Tybee where they complete their loading.

About one mile from Savannah are the wrecks or obstructions, over which there are 18 feet of water at top of springs. Many vessels take the ground at this place in going down the river, but the bottom being soft mud they take no harm. When vessels are becalmed outside the bar at Tybee, the ebb tide carries them to the south-east and the flood tide to the southward, so that there is no danger of their being driven on shore.

Cotton Presses.—There are five in all, situated on the wharves and close to the shipping. The cotton being taken by hand-trucks direct from the press to the gangway is hoisted by steam tackles and lowered into the holds of vessels lying alongside the quays, so that no carting is required, thus sparing the inevitable expansion caused by jolting which would occur if being conveyed in drays.

The Upper Hydraulic Press has quay space for six ships of 700 tons register, with a draft of 17 feet. Shed space on wharves for 7,000 bales, besides large brick stores capable of holding from 12,000 to 15,000 bales, and which are connected to the wharf by bridges. There are four presses capable of turning out 100 bales per hour. In case of fire there are two hydrants with sufficient hose or piping to reach all parts of the yard.

The Lower Hydraulic Press has a very large cylinder 73 inches diameter, and gives a pressure of 1,800 tons on the bale, and will turn out 100 bales per hour. There is quay space to accommodate four ships drawing $16\frac{1}{2}$ feet of water, with storage on wharf for 5,000 bales, besides four large sheds or stores—separated from the wharf by the main road—capable of holding from 15,000 to 18,000 bales. There are four hydrants with flexible hose or piping to reach to all parts of the building.

The Tyler Press—which gives a pressure equal to about 1,000 tons on the bale—will turn out 1,000 bales per day, and has good quay space, with yard room for about 12,000 bales. Sheds are erected all around the yard. This press is also provided with hydrants and hose sufficient to reach all parts of the premises.

The other two presses are not quite so large, but they have good quay space for vessels, and are provided with hydrants and hose in case of fire.

Watchmen are continually on duty day and night at all the presses, and smoking is strictly prohibited.

Ships' Disbursements, 1877, at Savannah :—

Towage, with cargo	...	...	20 cents per ton.
„ with ballast	...	...	15 „ „
Lighterage to Venus Point...	...	80 „	per bale.
„ to Tybee	...	...	50 „ „
Compressing Cotton	...	...	60 „ „
Tyler Press, present rate, Feb., 1877	40	„	„
Stevedore's charges stowing cotton...	50 to 60		cents per bale.

Vessels while taking cargo pay no

Harbour dues.

Vessels laying-up or idle, pay ... \$1 50 cents.

Harbour Master's Fees ... 10 cents per foot over all.

All the above expenses are borne by the ship.

Graving Dock.—There is a dry dock on the other side of the river capable of receiving a sailing ship of the largest size; its dimensions are 315 feet long and 70 feet wide, and will take vessels drawing 16 feet of water. The rates for docking are as follows :—

Steamers entering dock, pay ...	45 cents per ton.
„ lay days ...	22½ „ „ per day.
Sailing vessels entering dock...	40 „ „
„ lay days ...	20 „ „ per day.

The above rates include blocks, use of shores, and shoring.

The dock is at present in the hands of a receiver, and is in a rather dilapidated condition, but hopes were entertained when I left Savannah that a company would shortly be formed, who would put it in first-class working order.

Marine Railway.—There is also a large Patent Slip or Marine Railway, capable of hauling up a vessel of 1,000 tons, drawing 16 feet of water; the length of the cradle is 250 feet. There are three tracks—the centre one being 25 inches wide, and there is ample steam power for hauling vessels up. The charges are the same as for the Graving Dock. The proprietor has all necessary appliances for executing repairs on the premises; he

has also on the premises, and ready for immediate use, 6 two-inch Andrews' centrifugal steam pumps, and two large marine steam pumps—10 and 15 inches, capable of discharging 700 to 1,000 gallons each per minute, besides lifting and other wrecking appliances.

Pilotage.—The following are the charges for pilotage from the bar to Savannah :—

10 feet draft	...	...	...	...	pays \$82·94
12 ,,	...	...	...	...	46·44
14 ,,	...	...	...	...	63·73
16 ,,	...	...	...	...	82·08
17 ,,	...	...	...	...	93·16
Detention of pilot, per day, is	...	...	...	...	4·82
<i>Drop.</i> —To or from Tybee, is	...	...	...	...	\$17·28
,, Venus Point	...	...	...	...	17·28
,, Four-mile Point	...	...	...	...	12·96
,, Five-fathom Hole	...	...	...	...	10·80

Depth of water at Tybee is 24 feet, at Venus Point 19 feet, and to the City 17½ feet.

The amount of cotton exported from Savannah during the last four years has averaged over 600,000 bales, it will, therefore, be seen how important a port it is, even although deep drafted ships have to float down the river to complete their loading.

PORT ROYAL, SOUTH CAROLINA.—A very fine natural harbour, capable of holding a large fleet of ships at anchor. It is situated between Savannah and Charleston; has 31 feet of water on the bar, and at high water spring tides there is 7 feet rise and fall. Vessels carry 26 feet of water from inside the bar right up to the wharf, a distance of 15 miles. The harbour is well protected from all winds. The town itself is comprised of about forty wooden houses, occupied mostly by negroes. There is good wharfage for about a dozen vessels, but there is a great want of sheds and proper protection in case of fire. There are no facilities in the neighbourhood for repairing vessels; the nearest blacksmith's shop is at Beaufort, distant about two miles.

The nearness of this port to Savannah will prevent its being of

any great importance for some years yet, and its success will probably be ruinous to Savannah as a shipping port.

The bulk of the cotton shipped at this port for Europe is compressed at Augusta, distant from here 112 miles, from whence it is brought down to the ships by rail. There is one small steam press close to the wharf. Vessels loading cotton for Europe are generally chartered by lump sum, the charterers paying compressing, stowage, and other charges. Coasting steamers call weekly and take the cotton from the interior uncompressed on to New York.

STEERING GEAR.



AN experienced officer, who is well known in the merchant service for his many contributions on professional subjects, has recently published an article in the *Nautical Magazine* on the above subject. He commences with a description of the loss of the steamship *Dakota*, and attributes the disaster to the position of the steering-wheel. It is quite possible that, in this particular instance, it may have been instrumental in bringing it about, but there were, doubtless, concurrent circumstances which, in the main, were primarily the cause. Why, on a dark night, was a large ocean steamship run at a very high rate of speed so near the land, that a single mistake of the helmsman proved fatal; especially when, according to the writer of the article in the *Nautical Magazine*, the orders from the officer of the watch had to be passed through so many individuals. Was there not a telegraphic communication between the bridge and the wheelhouse, that such a primitive method of signalling was adopted? If not, why not?

Not long since, the writer crossed the Atlantic in a splendid ship of the Cunard Line, and she was steered aft by hand machinery. For the best part of half a century, that company have used no other method, and there is not an instance on record of the stranding or colliding of their steamers. In those of recent date, steering engines will probably have been introduced, and it is

not too much to record in their favour, that the elegant simile of the great Scotch reviewer may fairly be applied to those of Macfarlane Gray that they will "rend an oak or pick up a pin." In the largest class of steamers they are a necessity; in the small, a luxury. A ship which may be over four hundred feet between the perpendiculars is difficult to steer by hand in narrow waters or when running before a heavy sea. As science is gradually lessening the consumption of coal per horse power, it is reasonable to hope that at no remote period all large vessels will be steered by the aid of steam. Until that time arrives, it will be well to utilise the hand machinery which is commonly found on shipboard.

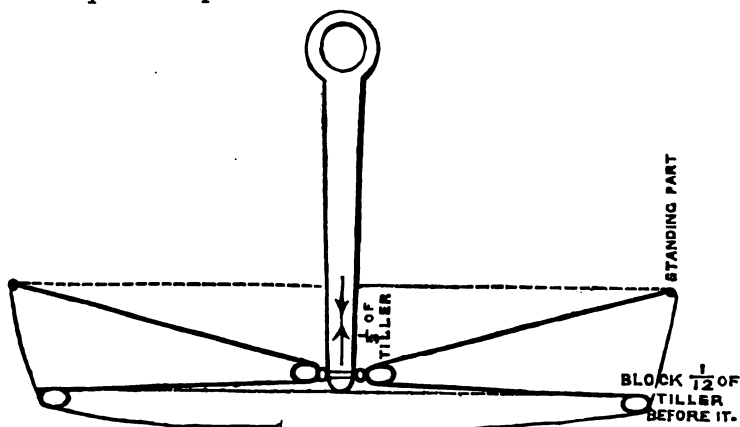
If the plan suggested by the writer in the *Nautical* were practicable, a great mechanical advantage would be gained, but in no instance could it be adopted without serious inconvenience and risk. In men-of-war, which still steer by the primitive hide wheel-ropes, they are led below deck over brass rollers, and the racket they occasion in the finest weather, when the ship is under steam, would frighten landmen. As the pintles wear down, the jerking of the tiller resembles that of a tethered dog, and at times excites the anxiety of experienced seamen. Passengers would never become reconciled to the clatter of a chain in their state-rooms, and it is probable that the gentleman who has suggested the arrangement would pass many a sleepless night from the ceaseless noise overhead, and have his breakfast spoiled by complaints in the morning.

The friction would become an important element, and it is difficult to realise in what manner the chains and rollers could be oiled without becoming an intolerable nuisance in the saloon of a passenger steamer. The supervision must certainly entail an additional amount of anxiety on the commander, for it would not be correct to leave covered-in chains to the care of a subordinate.

In a cargo ship the difficulties may be considered practically insurmountable; for to keep a clear space from the tiller to the engine-room is an impossibility. Such a sacrifice of storage cannot be expected from the shipowner, even if there were not other points to be taken into consideration. For example, how are the

relieving tackles to be worked, and, if the chains break when passing through a cargo compartment, by what method are they to be removed in a reasonable period, if at all? Apparently the writer of the article has not visited steamships of recent construction, or he must have noticed that quadrants of the pattern he proposes are fitted to the majority of their rudders. In many of great tonnage the quadrant becomes a circle, and acts as a species of fly-wheel, in addition to preventing slack chains. This arrangement may be seen in nearly the whole of the Atlantic steam liners, and will probably soon become general. Although great indifference is often shown by the builder or designer in making proper fittings for steering, yet the blame does not wholly rest there. It is well known that glands are allowed to set fast, that the sheaves of gins are not kept properly oiled, and that the cogs are neglected. On the other hand, the pintles are frequently not cylindrical, and the heel pivot so defective as to throw the weight of the rudder entirely on the gudgeons.

In the Navy, where many of the tillers are sixteen feet in length, the slack wheel-rope is when taken up by the annexed simple plan, which does not appear to have been introduced into the Merchant Service. The application is easy, and the sketch does not require an explanation.



But for this disposition of the blocks and standing parts the bights of the ropes would sweep the deck, and the "kicking"

become dangerous. By its aid ships of 10,000 tons have, until quite recent times, been safely handled when performing critical manœuvres, or running before a heavy sea.

In the ordinary merchantman the positions of the blocks and standing parts are often marked out by an ordinary shipwright or rivetter who may have been ordered by the foreman to put them in place, and when such is the case precision cannot be expected.

The remarks on the apparent apathy of the Surveyors of the Board of Trade indicate a want of knowledge of the functions of these officers. They have no authority to order a new steering apparatus, or to alter the position of a single bolt unless they can show satisfactorily that the safety of the ship would be endangered by the existing arrangements. Such powers would prove highly prejudicial to the shipowner, lessen individual responsibility, and effectually fetter improvements.

The writer in the *Nautical Magazine* also objects to the amount of the maximum angle of 45° which scientific and practical men of every age and nation have hitherto believed to be the most effective for all purposes (the Navy is 42° with the keel), and in lieu he would diminish the size of the rudder by one-half, and increase the angle to 90° . He further states that at present he would so arrange the power as to make seven turns of the wheel put the helm hard over from amidships. Hence by the reduced size of the rudder, and consequent increase of angle, the number will be doubled, or in other words from hard a-port to hard a-starboard will take twenty-eight turns. This is only one of many practical difficulties which he might have to contend against. Coasting steamers when discharged are scarcely to be trusted in bad weather now, and the proposed rudder cannot be safely adopted by them, or indeed by any whose cargoes are uniformly light. We often hear of rudders being increased in size, never diminished, which is due to the smallness of the most effective part.

The writer well describes the act of turning steamers in the Mersey, but the error lies more with those in charge than with the steerage. It is a significant fact that very large ships are never seen in the jeopardy he points out, for they adopt the careful and seamanlike fashion of turning at the Rock, and then they either back or drift up.

There cannot be any possible excuse for disregarding such an example. Too often officers allow themselves to be influenced by pilots in lieu of following the promptings of their own judgment and experience. The commander of every steamer should know better than the pilot what liberties can be taken with her. He is acquainted with her performance under all possible circumstances, but the other may never have seen the vessel before, and yet many blindly repose perfect confidence in an unknown man. An analysis of the accidents on the Mersey will prove that in most instances the scenes referred to might have been avoided by more judicious management. If men will unnecessarily rush their ships up on a strong flood they must be prepared to accept the consequences.

All long steamers should and generally do steer forward, and it is recommended that a more general attention should be paid to the shelter of the helmsman. Many pay no regard to this necessity, and allow him to stand exposed to the inclemency of the wind and sea, and affect surprise that the ship is not steered well, or demand, if the question is raised, whether the helmsman is made of sugar or salt.

W.

CORRESPONDENCE.

NOTICE TO CORRESPONDENTS.

We are exceedingly glad to receive letters on nautical matters, and as often as our space, and the nature and style of the communications will admit of it, we are glad to publish them. But we must ask our correspondents to be so good as to condense their letters as much as possible. We desire that in our correspondence columns all sides may have their say, but this is obviously impossible when one letter occupies many pages. We must either decline to publish very long letters, or must so reduce them that their authors may have some difficulty in recognizing their own literary offspring. We would venture to suggest to our corres-

pondents that, at the commencement of their letters, they should state clearly and concisely the points to which they desire to draw attention, and to make their subsequent arguments or remarks as brief as possible. We offer these suggestions solely in the interests of our numerous readers.—ED.

RULE OF THE ROAD AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—Having been a constant reader of your valuable magazine for some considerable time, and noticing with much pleasure your habitual courtesy in finding room in your publication for any correspondence that may tend in any way to the welfare of the mercantile marine, I take the liberty of offering a few remarks upon the subject of the Rule of the Road at sea. I am inclined to believe that collisions often occur by the premature or injudicious use of Article 19 of the Steering and Sailing Rules, which reads as follows :—

"In obeying and construing these rules, due regard must be had to all dangers of navigation, and due regard must also be had to any special circumstances which may exist in any particular case, rendering a departure from the above rules necessary in order to avoid immediate danger."

I believe that, in many instances, a vessel required to give way by the rules does not do so in sufficient time; but I also have a deep conviction that in many cases of collision the blame does not *always* rest with the vessel required to keep out of the way, but frequently is attributable to mismanagement and misjudgment on the part of those on board the vessel which should hold on, in acting under Article 19, either prematurely, or in an indiscreet manner. It seems to me that an addendum should be made to the present rules to guide the vessel whose duty it is under ordinary circumstances to *keep her course* when taking refuge under Article 19; so that the vessel which has to keep clear may form some idea as to the best and safest means of doing so. In the case of two vessels beating on different tacks, both being wishful to keep as far to the windward as possible, the vessel on the port

tack, perhaps, does not yield until such time as the vessel on the starboard tack, becoming alarmed, considers it necessary for her to act under Article 19; each vessel thus endeavouring to go under the *stern* of the other, a collision is more than probable.

In my opinion nothing adduced in a court of inquiry can, or would, justify a vessel on the port tack persistently keeping her luff, or not giving way in ample time and relieving the vessel on the starboard tack from any doubt as to her intentions.

It appears to be by no means an uncommon thing amongst most able and experienced nautical men, that where the vessel on the port tack does not yield sufficiently soon (*i.e.*, in the opinion of those in charge of the vessel on the starboard tack), the latter takes advantage of the contingency clause to avoid supposed immediate danger, and puts her helm up, or, in other words, keeps her off, instead of deadening, or stopping her way by putting the helm down, letting go lee braces, or, if necessary, going round on the other tack; thereby giving the former vessel the option of crossing ahead or astern, whichever could be done the most expeditiously.

In order to explain this more clearly, let me state a case as follows:—

Let us suppose a sailing vessel to be steering close-hauled on the port tack, and makes some little distance off, say in hazy weather, a red light B on her own starboard bow, which of course would be a sailing vessel close-hauled on the starboard tack; the officer in charge of A, knowing it to be his duty to keep clear of B, immediately determines to do so by keeping under the stern of the latter, A of course not anticipating that B will in any way interfere with her free action. At the same time, suppose it unfortunately happens that the officer on board B, seeing the green light of A, becomes alarmed and gives the order for B's helm to be starboarded, considering that she is so close as to entitle him to act under Article 19 (in so doing running towards A, who is taking the same step), instead of keeping his vessel to the wind, and allowing A to clear her. If a collision should occur, it is aggravated by the fact that both vessels by the time they encounter each other are off the wind, and of course going at a great and dangerous speed through

the water, with no immediate means of impeding their progress, until brought up by one another's hulls.

The *Avalanche* and *Forest* collision appeared at first sight to be a case of this kind from strong presumptive evidence adduced at the inquiry. The *Forest* must undoubtedly have paid off considerably from the wind from the fact of her striking the *Avalanche* on her port side, which could not otherwise possibly have occurred ; but how she got off in this position does not appear to be very clear. The *Avalanche*, on the other hand, having the wind on her port quarter or aft, by the evidence of one of her officers, shows that she was attempting, when the collision occurred, to go under the stern of the *Forest* ; whether she delayed too long, or lost time in giving way, it is not for me to discuss. Captain Lockhart, in his cross-examination, states that " to the best of his judgment, if he could have kept his ship up to the wind, there would have been no collision."

This catastrophe no doubt goes to prove (although in this particular case putting the helm up, or letting the ship fall off, was not proved to have been intentional) that the practice of putting the helm up under such circumstances is always fraught with great danger, as in the event of the other vessel taking action at the same time (which often occurs) it is almost sure to lead to a very disastrous collision.

The practice already deprecated of acting in an injudicious manner under Article 19, and in many cases prematurely, not only affects the safety of sailing vessels, but also places steamers in jeopardy when endeavouring to keep out of their way. It is the duty of a steamer most undoubtedly, on making the lights of a sailing vessel, to immediately take steps for relieving the anxiety of those in charge of the latter by shaping her course, so as to prove beyond doubt that she will not come to close quarters. Of course, a hard and fast line, for the guidance of an officer on this point, cannot be laid down, and would never succeed in practice ; a certain amount of discretionary power must always be left to the judgment of the officer in charge. But it is incumbent by the " Rule of the Road " that a steamer must give way and keep clear of sailing ships, and as this duty is imposed upon her, she should

not, when endeavouring so to do, at the same time be expected to counteract any want of judgment or discretion on the part of those in charge of the sailing vessel. The latter, if acting under Article 19 should be compelled to act with some degree of uniformity, so as to enable the steamer to perform this duty by manœuvring as she thinks proper and expedient, as she is entitled to do by the rules. The steamer cannot reasonably be expected to act with the remotest degree of safety and confidence if the sailing ship in some cases puts her helm up and runs towards the steamer, endeavouring to go under her stern, or at other times is brought to the wind, according to the varying opinions of officers. To meet this difficulty, I would suggest that some rule should be laid down for the observance and guidance of the sailing vessels, at such time as they may consider they come under the Article 19, to avoid immediate danger ; and of such a nature that the step taken would not aggravate the danger of a collision, and at the same time would enable the steamer, in giving way, to act with confidence and precision. A clause to that effect might, I think, be so framed that the sailing vessel, under certain special conditions therein set forth, should still have a discretionary power, provided she could prove clearly that the course adopted was the *only* safe and practicable one to avoid a collision, the *onus* of that proof to rest entirely with her.

We will suppose another case of this kind for the sake of illustration. A steamer C steaming along head to wind, makes a sailing vessel D's red light on her (C's) starboard bow, and, determining to go under D's stern, ports her helm ; but it unfortunately happens that at the same moment D, getting rather uneasy and apprehending a collision, having perhaps seen C's light for some considerable time, comes to the conclusion that C has no intention of yielding ; consequently puts her helm up or to starboard, thereby turning round, and sailing with her head towards, and intending to go under the stern of C, the result would inevitably be in a majority of instances a collision of a most serious character ; whereas had D, if finding herself compelled to act under the emergency clause deadened her way, or remained stationary as near as possible, by putting helm down, letting go lee braces, or,

if necessary, going round, C might sheer out of the way without the least difficulty. If the latter happened to be going with the wind well free, and not possible to deaden or stop her way immediately, she might trim her yards with that view in the best possible manner, and, at the same time, if no other good resulted, it would enable the steamer to act with confidence at once in going under the stern of the sailing vessel, knowing then that no danger of collision would be occasioned if so doing.

To provide for emergencies in the case of steamers and sailing vessels, I would suggest that it should be incumbent upon a sailing ship, when seeing the steamer on her own *lee side*, to keep the luff, so as to enable the steamer, whose duty it is to keep clear, the privilege of acting as she thinks proper, without the risk of the approaching vessel at any time throwing herself towards, or interfering with, the steamer's free action, in case the latter should determine to go under her stern. In cases where, by putting the helm up, the sailing ship should be actually turning with her head, and thereby running from the approaching steamer, which would generally be the case when the sailing vessel had the steamer on her own weather side, I propose that the sailing ship shall (unless she can prove she adopted a more judicious course) put her helm up. Should she do so, and a collision then unfortunately occur, the weight of the blow would fall more obliquely, and both vessels, by the time they came into contact, would be heading and turning somewhat towards the same direction, and consequently diminishing the risk of serious consequences. This mode of procedure would always allow a clear passage for the steamer to cross the stern of the sailing ship, instead of the present uncertainty of action, and would enable the steamer to act with confidence at once.

As regards the two sailing ships close-hauled on different tacks, in the case of steamers and sailing ships, and also vessels going free, in fact in all cases, it will be evident that the opinions I have expressed may be resolved into the following proposition :—

In any case where a sailing vessel has the steamer or sailing ship on her own port-side, she must port her helm, &c., when on the starboard-side she must starboard her helm. The rule should

be *never to act otherwise*, unless it can be proved that the same would aggravate the danger, and absence of proof to be in default.

The cardinal advantage to be gained by the course here advocated, and one which cannot, I think, be over-estimated, is the impossibility of the vessel required under ordinary circumstances to keep her course, showing a side light suddenly of a different colour, if compelled to act in immediate danger. The evolutions here recommended would, in every case, be the means of keeping the same light towards the vessel required ordinarily to keep clear. I feel quite convinced all practical men would hail a rule of that kind as a very great boon, as all officers cannot but have, at some time or other of their career, felt a weight of anxiety when approaching another vessel, from the apprehension that she may simultaneously with his own movement of the helm, show suddenly the *red* instead of the *green* light, or *vice-versa*; in addition to this, the general tendency is to throw the vessel's head away from an approaching danger.

With reference to the suggestion of a signal being displayed, I should state that, as a rule, I have very little faith in, and am decidedly averse to signals when adopted as a means of communicating intentions of proposed movements of the helm, &c., to an approaching vessel, without they are very simple and clear; as I am inclined to believe that in many cases mistakes in making same, and misunderstandings in interpretation by the approaching vessel, are often as fertile a source of danger as if no signal were exhibited at all; but I do think that where a vessel is situated similarly to that set forth in the proposed rule, no possible harm, nor practical inconvenience, could arise if the vessel in danger were to use some simple method of drawing the attention of the approaching vessel, and would be an additional safeguard that the latter had made her out.

Many persons are of opinion that legislative interference in all cases is not desirable, and that the rules should leave a great deal to the nautical skill and judgment of the officer in charge, consequently they are averse to any hard and fast line being introduced into an emergency clause. This view is undoubtedly correct in

some respects, but when we take into consideration, in the first place, the fact that the vessel primarily responsible for keeping clear, has the discretionary power left her by the rules to do so as she thinks proper ; and, in the second place, the officer in charge of an approaching vessel, acting (perhaps prematurely or injudiciously) under Article 19, thereby becomes possessor of another discretionary power, the two acting, probably, simultaneously, without any uniform custom, cannot but lead to confusion ; as what one man might consider a discreet thing to do, another would probably look upon as the very reverse.

No doubt many nautical men would be inclined to say that these propositions appear all very well on paper, but how would they work in practice ? How do you expect a sailing vessel to throw herself a-back, &c., in heavy weather, say in a gale of wind ? My answer is, you would not be expected, as under those circumstances the words " Provided there is no other imminent risk," would apply ; only, of course, the *onus* would be upon you to prove such *risk* in case any accident occurred.

When we consider that the crossing of two vessels close-hauled in different tacks, especially in narrow channels, is one of the most common relative positions of crossing vessels, and that a very considerable majority of the collisions occur, not when the ship required to keep her course, under ordinary circumstances, *is so doing*, but when she is using a discretionary power under Article 19, on immediate danger appearing, and in so acting frequently throwing herself in the way of the other vessel, and thereby, probably, shewing a light of a different colour, it becomes a matter of vital importance, and establishes, without doubt, I think, the advisability of a rule to govern her. In speaking of narrow channels in this paragraph, I do not refer to vessels in rivers, &c., as under these circumstances each vessel would, of course, have to consider, in addition to danger of collision, the risk of running on shore, or coming into contact with other vessels.

To avoid any misunderstanding, I wish to repeat that the whole of the foregoing remarks apply only to vessels required ordinarily to keep their course, should they be compelled to act under Article 19, in order to avoid immediate danger of collision.

be *never to act otherwise*, unless it can be proved that the same would aggravate the danger, and absence of proof to be in default.

The cardinal advantage to be gained by the course here advocated, and one which cannot, I think, be over-estimated, is the impossibility of the vessel required under ordinary circumstances to keep her course, showing a side light suddenly of a different colour, if compelled to act in immediate danger. The evolutions here recommended would, in every case, be the means of keeping the same light towards the vessel required ordinarily to keep clear. I feel quite convinced all practical men would hail a rule of that kind as a very great boon, as all officers cannot but have, at some time or other of their career, felt a weight of anxiety when approaching another vessel, from the apprehension that she may simultaneously with his own movement of the helm, show suddenly the *red* instead of the *green* light, or *vice-versa*; in addition to this, the general tendency is to throw the vessel's head away from an approaching danger.

With reference to the suggestion of a signal being displayed, I should state that, as a rule, I have very little faith in, and am decidedly averse to signals when adopted as a means of communicating intentions of proposed movements of the helm, &c., to an approaching vessel, without they are very simple and clear; as I am inclined to believe that in many cases mistakes in making same, and misunderstandings in interpretation by the approaching vessel, are often as fertile a source of danger as if no signal were exhibited at all; but I do think that where a vessel is situated similarly to that set forth in the proposed rule, no possible harm, nor practical inconvenience, could arise if the vessel in danger were to use some simple method of drawing the attention of the approaching vessel, and would be an additional safeguard that the latter had made her out.

Many persons are of opinion that legislative interference in all cases is not desirable, and that the rules should leave a great deal to the nautical skill and judgment of the officer in charge, consequently they are averse to any hard and fast line being introduced into an emergency clause. This view is undoubtedly correct in

some respects, but when we take into consideration, in the first place, the fact that the vessel primarily responsible for keeping clear, has the discretionary power left her by the rules to do so as she thinks proper ; and, in the second place, the officer in charge of an approaching vessel, acting (perhaps prematurely or injudiciously) under Article 19, thereby becomes possessor of another discretionary power, the two acting, probably, simultaneously, without any uniform custom, cannot but lead to confusion ; as what one man might consider a discreet thing to do, another would probably look upon as the very reverse.

No doubt many nautical men would be inclined to say that these propositions appear all very well on paper, but how would they work in practice ? How do you expect a sailing vessel to throw herself a-back, &c., in heavy weather, say in a gale of wind ? My answer is, you would not be expected, as under those circumstances the words " Provided there is no other imminent risk," would apply ; only, of course, the *onus* would be upon you to prove such *risk* in case any accident occurred.

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Trusting I may not be considered too prolix in my endeavours to lay the matter clearly before your readers, which latter object must be my excuse.

I am, Sir, your obedient servant,

GEO. BEALL.

Liverpool, 1st Nov., 1877.

BRIDGE STEERING GEAR.

To the Editor of the "Nautical Magazine."

SIR,—The article on this subject which appeared in the *Nautical Magazine* of October last, is, in my opinion, open to many objections. In common with the writer, I agree that all steam vessels should steer amidships, as well as aft, and that it is indispensable to the safe navigation of the ship that the steering-house should be close to the bridge, on which the captain or officer in charge generally stands; but I consider the writer is wrong in condemning so sweepingly the present method of fitting amidship steering gear.

In the first place, I would point out that it is absolutely necessary to have all chains and rods connected with the steering of the vessel—machinery which frequently gets out of order—in such a position that immediate access may be had to any part; and in cargo steamers this can only be done by fitting the steering chain and rods *above* deck. To fit a quadrant underneath the deck, and from it lead the chains and rods underneath the beams, boxing in the whole so as to prevent anything unsightly, would be a most awkward and dangerous proceeding, for accidents may arise at any moment, and the whole casing would have to be pulled down before the locality of the injury could be discovered and repaired; and by casing in the whole of this important machinery it would be impossible to examine it periodically, as is absolutely necessary.

Secondly, I consider Captain Miller's scheme likely to incommode some of the most important arrangements of the vessel. In all probability the cabins would be placed in the after-part of the vessel, and the huge quadrant, with its appendages, the chains, and rods, would be close to the sleeping berths of the passengers, causing great annoy-

ance to them during the night. Unless the quadrants are made excessively large, the rods would in all probability pass within the area of the after-cargo hatchway—would cause great annoyance in passing through the engine-room skylight, where it is proposed to fit tackles, and in all likelihood would foul the boiler mountings and superheaters, unless the engine builder altered his designs to suit. The fact of the tackles being fitted inside the engine-room skylight—for there they most assuredly would be, unless the gipsy-wheel were made abnormally large—is sufficient, in my opinion, to taboo this novel scheme, although Captain Miller considers this eventuality rather an advantage than otherwise, as the tackles could then be kept oiled and cleaned.

Engineers generally are not much addicted to taking an interest in anything connected with the vessel beyond their own province, and I very much question the satisfaction with which such an innovation would be viewed by them.

In theory, this scheme appears well adapted to overcome some of the drawbacks attending the fitting above deck of amidship steering rods; but I consider that, even for flush-decked vessels, it is wholly inapplicable, and still more ill-adapted for vessels with full poops or raised quarter-decks. From the rudder-head to the engine-room the machinery would be wholly covered up—first by casings, and next (rendering approach still more inaccessible) by *cargo*. In stating these objections, I assume that the bridge steering gear would, as in most instances, be erected immediately before the engine and boiler span, and in most cases the gipsy-wheel would be in the hold before the boilers; the rods, or chains, would pass through the stokehole entrance—another objectionable proceeding—and so to the gipsy-wheel in the cargo hold. On a voyage with the hold full, and anything going wrong with this wheel, the vessel would have to be steered from aft until she arrived in port. Surely the remedy is as bad as the complaint.

Now let us examine the present plan of fitting the steering rods, and see wherein lies the objection alleged by Captain Miller. The sketch accompanying his article shows clearly the usual method of carrying out this part of a ship's economy; but I distinctly object to the analogy of the rope yarn and rusty nail as being at

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all applicable to a steering chain passing round a moveable roller. True, in pursuing its tortuous way from the tiller end to the amidship purchase it has many bends, but the friction caused by the four "nips," can, by the application of large, well-fitted rollers, be reduced to a minimum; and even in a sea-way, when the slack chain is taken up by screws or small tackles, one man can easily put the helm hard over without the danger of being lifted off his feet. Some vessels are fitted with a quadrant, and others with a single tiller, to which the bridge chains are secured, the chains terminating a few feet past the first "nip," and rods fitted along the vessel's side. At the sharp turns or "nips" a metal sheave is placed, and it is the imperfect fitting of these sheaves which often causes a difficulty in working the rudder. They are frequently too small, and seldom fitted with that perfect accuracy which so important a detail demands. To ensure easy working, there should be as little friction underneath the sheave as possible, and the pin on which it turns should be carefully *turned*, and means for oiling it provided.

As regards the size of the sheaves, much depends on the place they occupy; but if it is practicable to make them large, without seriously incommoding other fittings, a great advantage would be gained by so doing. The diameter of these sheaves at present varies from 9 in. to 15 in. in diameter, but it is seldom they reach the latter size.

The guides fitted along the waterway, and through which the rods pass, are too frequently allowed to become fixed, instead of being kept in good order, so that the roller will turn with the motion of the rod. Placed on deck there is no difficulty in keeping the whole of the machinery in excellent order, and if by chance the rods become bent they are easily straightened.

Altogether, I am of opinion that the present mode of fitting bridge steering gear is much more practicable than the scheme suggested by Captain Miller; in theory, as I before remarked, he is undoubtedly right, but, reduced to practice, his suggestions are wholly inapplicable to nine-tenths of the merchant ships afloat. I have for long been in the habit of consulting officers of vessels as to the working of their steering arrangements, and the testimony

I have invariably received is greatly in favour of the present system. The principle of the double quadrant appears to me to be no new idea, for the troopships of the *Malabar* class are fitted with an arrangement which approaches very closely the scheme suggested by Captain Miller. Instead of a double quadrant, however, the rudder-head under the second deck is fitted with two tillers on the after side, and standing at an angle of about 45° on each side of the centre line of the vessel; a tackle is fitted to the port tiller leading to the starboard side, and to the starboard tiller leading to the port side, thus crossing each other.

Before leaving the subject, I would point out how desirable it is that a table with the size of steering chains and rods should be introduced into the rules of the two chief classification societies. At present, as far as I am aware, there is no rule to guide the ship-builder, and the consequence is that there is not the slightest uniformity in the sizes of steering chains in various sized vessels. Occasionally you find a vessel of a thousand tons with a steering chain large enough for a vessel two or three hundred tons larger, and *vice versa*.

I am, Sir, your obedient servant,

WILLIAM DENTON, M.I.N.A.

Malta, November 19, 1877.

RULE OF THE ROAD AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—“Simon Barjona” differs on one point only from me, I see, and on that point experience alone will decide whether the amended rule is better than “*Port both*.” I will only say here that I see no difficulty for the close-hauled vessel on the starboard tack to port his helm *all he can* (*alias* “Jam the wind”); while a close-hauled vessel on the port tack has “all the sea before him,” and can “*port*” to his heart’s content.

Still, I can appreciate “Barjona’s” dislike to a *special* rule, and would join him fully in his opinion but for the fear that the rule he prefers may be *abused* by those obstinate souls who so dislike “giving way” under any circumstances. There is no other posi-

tion, in my humble opinion, in which two sailing ships can get into collision under "Barjona's" rules, so I must decline his friendly challenge.

Yours faithfully,

ARTHUR B. MARTIN.

Norie's Nautical Academy,
157, Leadenhall Street, London.

WATCH AND WATCH.

To the Editor of the "Nautical Magazine."

SIR,—Well-informed men attribute many collisions to the pernicious and cruel system of watch and watch in the Atlantic trade, to which attention has already been drawn in your Magazine. Without attempting to enter into statistics on the question, it may be safely asserted that none but the zealous, patient, and hard-worked officers of the merchant service would be content to lead the life they do in mid-winter on the bridge of an ocean steamer. More than one has informed the writer that before his benumbed feet were warmed, and he asleep, one-half of the previous watch below had passed. Who can feel surprised that, under the influence of such hardships, men gather age quickly and often solace their weary hours with strong drink? While this goes on there is no hope of their advancing in educational points, and the greater number content themselves with the acquirement of the mere superficial elements of nautical science.

It is singular that the great pioneers of ocean steam navigation should have for the best part of half a century adhered to the original rules which were inaugurated with the formation of the company. At that remote period ships were not so hardly driven as they are now, and there was ample time in New York or Liverpool to recuperate from the hardships of the passage. Now it is not uncommon for a ship to be "turned round," and, in forty-eight hours after her arrival, to be steaming down channel again. There was also a system of reliefs by spare officers when in port, but intense competition has compelled the most liberal of owners to forego that luxury. While admitting the necessity of the abolition of superfluous hands, there appears to be no valid reason to prevent

the third officer from taking charge of the deck in the first watch after the ship was clear of the channel. The captain is generally on deck till midnight, if the weather be squally, or, what is of more importance still, foggy. The middle and morning could be shared between the first and second officers, and no one who has not paced the deck through a long series of years can appreciate what a luxury eight hours below really means. No other deprivation wears men so much as want of sleep. Food, important as it is, may be considered second to sleep. From reasons which it would be hard to analyse, all succeeding companies have adopted the watch and watch system. A feeling is abroad that, in the event of an accident to a passenger steamer, with the third officer in charge of the deck, the owner would be liable for all damages; and, further, that the Board of Trade consider such a course illegal. The writer is unable to see why this should be the case, provided the officer in question was a proper qualified person; and it may safely be asserted that, in nine cases out of ten, he has passed for a superior grade. The Act says the first and second officers must be certificated, meaning that two is the minimum number which the law deems necessary; but it is not hinted that more may not be borne when the liberality of the owner so wills it. However, if a legal difficulty does exist, the Board of Trade, who are always anxious for the improvement of the status of the officers of the Mercantile Marine, will, in all probability, support the movement of the shipowner. We constantly read of the necessity of allowing railway servants more time for rest and recreation, but their life is one of comparative ease when weighed in the balance with that of the hard-worked and much-enduring officer of an Atlantic steamship.

Yours obediently, C. E.

BOARD OF TRADE REQUIREMENTS FROM CANDIDATES FOR
EXAMINATION.

To the Editor of the "Nautical Magazine."

SIR,—Loud and deep has been the growling with which my ears have been greeted during the last few days, upon the subject of a Board of Trade circular which has been issued as far back as 1872,

but has not been hitherto enforced in London, whatever may have been the case at the outports. It may well have been enforced there without Londoners becoming acquainted with its contents ; as I well remember that for many years the candidates for second mate in London escaped the calculation of a Mercator sailing problem, while it was being worked by those who went up at the outports. I fancy some omission on the part of the printer caused the difference in favour of the London men ; at any rate, I know that it was a cause of great rejoicing among our favoured candidates. The difference has long since ceased, and all are now treated alike. Very interesting has been the gradual advance in the Board of Trade requirements from candidates to any one who, like myself, has been for five-and-twenty years engaged in the pleasant duty of *coaching* men for the examinations. In the bad old times, a man could go up Monday after Monday, until he succeeded in wriggling through the examiner's clutches ; the number of *shots* he might take being limited only by his power of endurance, and the depth of his pocket. At that time, a man could take his own book into the room with him, and nice specimens of collections of aids to memory they were—every fly-leaf being usually covered with formulæ for ready reference. In fact, the examination of that day was *no test* of a man's memory or knowledge, and yet numbers of candidates failed *many times* before satisfying the examiner. Then came the *black Monday*, when books were *pounded*, and only sets of tables supplied to the men by the examiner. No rules or examples, no scraps of paper, no *white blotting paper* even being given to him for scribbling purposes, only a marginal line upon the examination sheets being allowed for "minor corrections." Gradually but surely the bands have been tautened, until at last we have reached the present pitch of tension. The man must now be *infallible* who can succeed in passing the ordeal. He must find any error he may make at the *first* return of his paper by the examiner, or he has failed. And he has the whole of his work to do over again, on each of the *two* occasions upon which he is permitted to try and redeem his first failure. This is a very severe ordeal to most men, and comparatively few succeed in passing at the first shot.

After the 1st of January, 1878, more stringent rules will be enforced, as no half-fees are to be returned to the unsuccessful candidate, and fresh work is to be required of first mates and masters. The passing of the decision against returning the half-fee, caused deep growling among the future sufferers, but the issue of the latest circular has produced a feeling of deep consternation. It is because I think the latter feeling arises from a mistaken estimate of the effects which are likely to arise from its enforcement, that I have taken the liberty of writing on the subject to you, Sir, while fully aware that many abler pens than mine may enter upon the discussion.

It seems to me that a false impression exists, viz., that a man may *lose his fee* if he pays it in (as required by the new rule) before the examiner has passed his documents. Now, Sir, no *good man* need fear any such result, while the man alone who *deserves to be shut out* is likely to be the sufferer.

The moral of the whole thing is : *Get good references and keep them*, and then no one need fear any loss of fee ; the only difference in the proceeding is that a candidate will have to fill up his form of application and pay his fee before troubling the examiner with his documents. If *they* are good references he need experience no delay or difficulty ; if they are *bad* he had better stay away altogether, for he will certainly lose his fee, and deserve to do so. I know how constantly the examiners have hitherto been worried by men whose documents would not “hold water,” and who, after giving infinite trouble to *coaches* who bear the initial burden of investigation, and to *examiners*, and to “officials at the Registrar-General’s Office,” have finally been compelled to *petition the Board*, and, upon rejection of their application, have gone off without paying a penny for all the trouble they have given *all round*. This kind of thing will have “a stopper clapped on before all,” and justly so.

But there is another class of men not *bad*, only *reckless*, who somehow or other, in spite of all their own experience, “sail away from the pay table” without asking the *master* for a *private reference*, with a character for *sobriety* plainly stated upon it. There is an apparently invincible dislike to “writing out a reference”

in the minds of nine shipmasters out of ten. Is it because they take no interest in their crew and officers, and don't care a tinker's curse whether they rise in their profession or no? These men have all passed the ordeal themselves, and know how they were compelled to produce a reference from their own old masters, yet in many instances they will not, unless compelled to do so, take the least trouble for their juniors. No one but those who are behind the scenes can conceive the trouble and delay caused in after years by this selfish carelessness. Petitions to the "Local Marine Boards," and all kinds of humbug, simply because the word *sobriety* is not upon a *discharge*. The master is not always nor altogether to blame; it is very troublesome at times to have to *write out* a series of certificates for many officers and men; still, one of the apprentices might do the duty at his request, and he would then only have to sign his name to the documents; or, better still, why should not the Board of Trade issue some such printed skeleton form of reference as obtained in the Royal Navy for officers, and a parchment form for the men, with a *corner* which could be cut off in case of insobriety or *very bad* conduct. The master finds in these blank forms spaces for the date of commencement and end of service, while the words diligence, sobriety, and obedience to command are printed on them, and any of the words can be erased by a stroke of the pen, while a space is left for the insertion of any extra approbation he may wish to convey. I cannot help thinking that something of this kind would smooth all difficulties, and be a boon to master, officer, and "fore-mast man." If the references were lost, copies could always be obtained, and the present circular, which causes such consternation now, would come to be accepted as a real benefit to the deserving sailor, while acting as a check, indeed as a final stopper upon the troublesome class who are likely to be the only sufferers.

Apologising for the length of my letter,

I am, Sir,

Your most obedient Servant,

Nautical Academy,

ARTHUR B. MARTIN.

157, Leadenhall Street, E.C.

BOOKS RECEIVED.

The York and Antwerp Rules, as agreed upon at the Antwerp Conference of the Association for the Reform and Codification of the Law of Nations; with an Explanatory Introduction on the Law of General Average. By Henry D. Jencken, Barrister-at-Law, &c. Effingham Wilson, Royal Exchange, London. 1877.

At a very opportune moment this pamphlet has appeared, as it furnishes materials for the formation of a right judgment upon a most important question. Mr. Jencken states that in the remotest antiquity, the fundamental rule of General Average—viz., that all sacrifices voluntarily made for the preservation of ship and cargo should be equally borne by all concerned—was in operation, sanctioned by principles of natural justice. And he proceeds to trace the accretion of difficulties and complications down to the present time, putting before the reader in a clear light the position and condition at which the subject has now arrived. Not the least valuable feature of Mr. Jencken's publication is the concise summary given by him of the Law of General Average, showing, as it does, how great a diversity of opinion has existed on the subject at different times and in different countries.

Report of the Meteorological Committee of the Royal Society for Seventeen Months, ending 31st May, 1877. Presented to Parliament by Command.

Those who wish to see what is the general progress of matters in regard to the uncertain science of meteorology, should obtain this interesting blue book and study it. The Meteorological Office is, we venture to predict, destined to occupy a very important position in years to come; it is developing slowly, but most satisfactorily. If the supply of such interesting information as is to be found in the Report before us is continued, there is little doubt that the demand for it will increase; and the more widely the objects and work of the department become known, so much the better for the science of meteorology.

One paragraph we think it well to extract, and to commend it to the consideration of our readers.

“The committee cannot but regret that the number of observers co-operating with them still remains small when compared with the strength of the merchant navy of England. . . . But it must be remembered that the duty of observing entails a considerable amount of attention and responsibility, so that it is necessary that the captain should be supported by a zealous staff of officers to enable him to keep a full log.”

The Dock and Port Charges of Great Britain and Ireland, &c. By Robert Thubron. London: Charles Wilson, 157, Leadenhall Street. 1877.

FIVE years ago, the first edition of this work was published. It was then well received, and from that time has been extensively made use of as a trustworthy book of reference. The opening of new docks, the alterations in the depth of water at certain places, and the improvements and changes made at various ports since the first issue of the work have now rendered a second edition necessary. The compiler has taken pains to make this edition of his book more valuable than the last. Many useful maps have been added, and a variety of important statistics and information published in the form of an Appendix. We hope the second edition will meet with as much success as the first, for it undoubtedly deserves it.

Manual of Navigation. By Robert Assheton Napier, Lieut. R.N.R. Glasgow: Jas. Maclehose. 1877.

WE are not quite sure that any necessity exists for such a work as this—there are extant so many nautical manuals, epitomes, pocket-books, &c., all excellent of their kind. On looking over Mr. Napier's work, we find nothing new, and nothing which seems to us to justify a hope that the publication of the work will meet with great success. But we must say that the book is excellently printed and intelligently arranged. In these respects it may well claim superiority over many other maritime manuals which contain a great deal of useful information, but in which, for want of clear

and systematic arrangement, the information cannot be found without much searching and loss of time.

A Catechism of Navigation and Nautical Astronomy. By W. Marsham Adams, B.A., late Fellow of New College, Oxford; Member of the Mathematical Society, &c. London: George Philip & Son. 1877.

MR. ADAMS is the inventor of the Cœlometer and Mensurator. The first instrument is designed to illustrate Nautical Astronomy and Navigation, and the second illustrates Euclid, Trigonometry, and Analytical Geometry. Those who are familiar with the two instruments speak in high terms of them as serving to impart to the student clear ideas and notions of their subject, so that the theory as well as the practise becomes evident at a glance. The small "Catechism" is an adjunct to the Cœlometer, and by it those who are at any time beyond the assistance of a master can instruct themselves in the theory of Navigation and Nautical Astronomy.

A Manual of Naval Architecture. By W. H. White, Assistant Constructor, Royal Navy; Instructor in Naval Architecture, Royal Naval College, &c., &c.

MR. WHITE states in the preface that this book has been written with a view to place as much as is possible of the theory of "Naval Architecture" within the reach of those who have but an elementary knowledge of mathematics. While thus serving as a valuable introduction for students of naval architecture, who will afterwards proceed to works necessitating a knowledge of higher mathematics, it will, we think, be still more useful to the larger class who are much interested in the subject, but have always been frightened away from it by the mathematical symbols which abound in most works on theoretical naval architecture. Masters of merchant ships, shipowners, shipbuilders, and surveyors desire just this kind of book, in which questions of strains, strength, tonnage, buoyancy, stiffness, propulsion, and the general subject of the behaviour of ships at sea are treated in popular language; and we can certainly say that Mr. White has done his work admirably, and has quite fulfilled the promise of his preface. We heartily recommend the book, and propose in a future number to review it in detail.

On the Present System of Manning our Merchant Ships. By Robert C. Halpin, F.R.G.S., late Commander of the s.s. *Great Eastern*. London: Metchim & Son, Clement's Lane, E.C. 1877.

THE burden of Captain Halpin's short essay is to the effect that every officer, engineer, seaman, and fireman, submit to be medically examined before signing articles; that the Board of Trade appoint medical officers for such purpose at every British seaport; that the examination fee be paid by the sailor; and that an indorsement be made upon the discharge note as to any disease from which the holder may have suffered, &c. We do not propose to criticise Captain Halpin's suggestions, but would observe that, as he writes in an earnest and practical manner, and has, no doubt, some claim to be heard upon the subject, his little pamphlet is worthy of being carefully read by all who are interested in the question of manning our merchant navy. We should, however, like to hear what the officers have to say on Captain Halpin's proposal as regards themselves; what the seaman's opinion is as to the payment of the fee for his own examination; and what the country thinks of the establishment of a large army of doctors all round the coast, under the supervision of a Government department, for the special benefit of one class of the community.

MARINE INVENTIONS.

Monthly List of Patents.—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all enquiries should be addressed.

ENGLISH.—APPLICATIONS.

4250. Henry Thomas Brown, New York, U.S.A. "Improvements in submarine torpedoes and in the means for propelling the same."

4279. Robert Griffiths, Bayswater. "Improvements in propelling steamships or vessels."

4281. William Hair Haseler, of Birmingham. "Improvements in magnetic or mariners' compasses and in ornamenting the said compasses."

4288. Andrew Betts Brown, of Rosebank Iron Works, Edinburgh. "Improvements in hydraulic capstans."

4355. Carl Böhm, of Mark Lane, London. "Improvements in apparatus for discharging petroleum or other hydro-carbon fluids from torpedo boats and other vessels."

4361. Conrad D'Huc Gustave Dressler, Barnard's Inn, Holborn, London. "Certain improvements in the construction of sailing and other vessels, whereby greater stability and increase of speed is effected."

4365. James Munro, of Seaforth, Lancashire. "Improvements in ventilating ships and in apparatus or appliances therefor."

4397. Lawrence Garrick, Greenock, Renfrew, N.B. "Improvements in and connected with apparatus for driving or working ships' pumps, part of which apparatus is applicable to other purposes."

4441. Henry Francis Knapp, of 70, Cornhill, London. "Improvements in method of applying the engine power for propelling vessels, being a substitute for the side-wheel paddles and also the screw propeller."

4497. James Humphrys, of Barrow-in-Furness. "Improvements in the construction of iron, steel, or other ships."

4503. George Vincent Fosbery, of Weston-super-Mare. "An improved manner of protecting gunboats, torpedo boats, and similar vessels from the effects of rifle shot and other projectiles."

4578. Charles Ambrose McEvoy, of the London Ordnance Works, Bear Lane, Southwark, Surrey. "Improvements relating to torpedoes."

4590. Edmund Thompson, of 27, Leadenhall Street, London. "Improvements in the construction of vessels, or boats and rafts, and in the launching and lowering of boats and rafts from on board ships into the water."

4676. Robert Turnbull, of South Shields, Durham. "Improvements in and connected with pontoons to enable vessels to be lifted out of the water for repairs or other purposes; also in side walls of docks or structures to be used part therewith."

4694. Robert Henry Battersby, Esq., Lakefield, Crossakeel, Co. Meath, Ireland. "An improved apparatus for saving life at sea, and which is also applicable for use as recreation and other purposes."

4727. John Harmanns Fisher, Baltimore, Maryland, U.S.A. "Improved means of protecting the hulls of vessels from torpedoes; applicable also for increasing the buoyancy and carrying-capacity of vessels."

ABRIDGEMENT.

1461. Anthen Steenberg, Copenhagen (communication from Etatsraad W. Wain, Copenhagen). "Improvements in steering apparatus." This consists of an arrangement of steam steering gear capable of being instantly converted into hand gear. Two cylinders with suitable valves actuate a transverse shaft placed over the wheel shaft. The shaft carries a worm which engages with a wheel running loose on the steering wheel shaft. The end of the wheel shaft carries a conical clutch which revolves with it, and can be advanced and retracted by a hand wheel. The worm wheel on the wheel shaft also carries a conical clutch. A pinion on the front of the wheel shaft works the chain drum in the usual manner. As long as the clutches do not engage, the vessel is steered by the steering wheel, by screwing up the hand wheel the clutches come in contact, thus gearing the worm wheel (which is actuated by the wormed shaft and the cylinders) with the wheel shaft and chain drum. The valves are actuated by bell crank, levers, and a rocking shaft, a single handle controlling the gear.

1481. John Scott Russell, and Henry Lumley, London. "Improved means of manœuvring ships." The after part of the stern carrying the propeller is pivotted to the fore part, and so can be swung laterally to assist in steering the vessel.

1643. William C. Thompson, C.E., Patent Agent, Liverpool (a communication in trust for Jas. H. Carpenter, New York). "Im-

provements in, and relating to apparatus for propelling, and for steering screw steamers." A frame adjustable vertically is placed in the stern, and capable of being swung laterally, and which carries the propeller, the shaft of which is coupled to the engine shaft by ball and socket joints. This arrangement allows of the adjustment of the propeller to varying drafts of water, and the vessel is steered by the swinging frame.

1646. Robert Rayne and Robert Charlton, Newcastle-on-Tyne. "Improvements in apparatus, or means for ascertaining and indicating the level or depth of water or any liquid in the holds of ships, and in other vessels or receptacles. A pipe proceeds to the hold carrying a box with a hole at its lower end, the other end of the pipe is connected to a mercurial syphon tube, and graduated scale. The liquid enters the box at the end of the pipe, and by pressing on the air in the tube acts on the column of mercury to show the depth on the scale.

1712. Thomas Ridley Oswald, Southampton. "Improvements in the construction of armour-plated vessels and armour-plates or bars." The vessels are built with oblong batteries, the bow and stern being formed entirely from the foremost and aftermost point of the battery. Trough iron is used for plating.

1743. Sir Jos. Whitworth, Bart., Manchester. "Improvements in the manufacture of armour for ships and forts." This consists in using perforated steel plates, so that in case of a shot striking, the plate is not liable to crack. The plates are oil hardened, and the holes can be filled with plugs if desired. The plates may be in the form of hexagon slabs, the hole being in the centre.

1775. D'Amora Pasquale, Place du Statut, Turin. "An improved hammock for preventing sea-sickness." The hammock is suspended from a frame by rubber bands and pulleys. The frame work of it is wood, bound with cord or wire. The hammock is connected to a wooden frame by rubber bands and pulleys. This is attached to a frame bolted to the ceiling by iron rods. Elastic cords are attached to the deck to steady the motion. The hammock can be stayed rigidly if required in calm weather.

1794. Thomas Shepard Seabury, New York. "Improvements

in the mode of obtaining motive powers for vessels, and in machinery for utilising said powers. A description of the American patent appeared in our list some months ago.

1839. Jonathan Jopling, Bishop Wearmouth. "Improved apparatus for propelling and steering vessels." This relates to his patent, No. 1481, of 1865, in which a horizontal fan revolves in a case at the stern. The case can be rotated so as to cause the water to escape in an inclined direction and steer the vessel. The present invention consists in forming the case of conical section, and providing large outlets for the water.

2441. John Warren Fowle, Boston, U.S. "Improvements on marine engine governors." This consists in making a float, in a tube at the stern, operate a small steam piston in a cylinder for working the throttle valve, the sinking of the float rod opening the valve of the small steam cylinder and thus shutting the throttle valve; a small supply pipe from the main pipe keeps the cylinder supplied with sufficient steam to prevent the piston stopping on the centre. The rod of the small steam cylinder operates a pump connected to a water reservoir in such manner that the steam piston can only move at a certain speed, which can be varied by a water cut-off valve, as on moving forward the pump piston has a body of water before it which can only escape back to the reservoir at a certain speed, as it has to flow through a regulated opening. On the piston moving back, a quantity of water is drawn in through a flap-valve ready for the next movement.

AUSTRIA.

28. G. Moravia and G. Veneziani, of Trieste. "A paint for protecting the metal linings of ships from the action of sea-water and from fouling."

CANADA.

7607. Charles H. Parker and John W. Suggett, of Cortland, N.Y., U.S.A. "Improvements on boat oars."

7648. David Rodgers, of St. Louis de Gonzague, and Robert Bickerdike, of Montreal, Quebec. "A screw-propeller."

7685. J. Bettley, London, England. "Galvanic sheathing for ships."

7688. W. Davenport, Philadelphia, Pa., U.S.A. "A paddle propeller."

7698. H. J. Cole, Wandsworth Road, England. "A ship cleaner."

7792. Robert D. Duthie, of Aberdeen, Scotland. "An instrument for drawing ships' lines."

7798. Charles H. Herson, of Lord's Cove, N.B. "Improvements on steering apparatus."

BELGIUM.

48402. K. Ahlborg. "Mist signals and apparatus for steamers."

FRANCE.

117391. Macpherson. "An apparatus for lowering, launching, and setting free ships' boats."

117626. Brice. "Means of preventing the racing of marine engines."

117704. Clark and Stanfield. "Improvements in shoring and supporting vessels in docks, pontoons, or cradles, in floating them over shallow bars, and in raising sunken ships."

116844. Cole. "Improvements in an apparatus for cleansing ships' bottoms whilst afloat."

117188. Rohirier, of Blaye. "Raising stranded or sunk vessels."

117235. Jacquel. "A propeller boat."

117255. Drevar. "A maritime car, applicable also as a combined buoy and lifeboat."

GERMANY.

2861. C. Essbüchl, of Læbersdorf. "An oar-motor worked without paddle-wheel or turbine."

8209. W. H. Smith, Edgbaston, Birmingham. "Manufacturing armour-plates."

8492. Dr. Meyer, sen., Wismar. "A rowing apparatus for boats."

AMERICAN.

196186. Lawrence Brown, Chatham, N.B. "Marine Locomotive." This consists in mounting a superstructure on a series of revolving air-tight drums, which run on top of the water and are driven by cranks worked by machinery on the platform or vessel. The drums are of a polygonal section. A series of vessels can be coupled together, thus forming a marine train.

196240. Samuel Marden, Newton, Mass. "Propellers for vessels." This propeller consists of a pair of floats or vanes pivoted on a vertical shaft. The top of the vanes is connected to a crosshead sliding in guides, and so arranged that on moving forwards, the vanes expand against the water, propelling the vessel forward; on the return stroke, they fold together, so as to offer little resistance. By means of a pinion and rack arrangement on the crosshead, the position of the vanes may be reversed for driving the vessel a-stern, by simply moving an eccentric, causing the teeth to clutch and reverse the vanes.

196813. Henry Marcotte, U.S. Army, Newport, Ky. "Paddle-wheels." The invention consists in so arranging the buckets that their edges and sides each form an angle with the axis of the wheel, the edges and sides of each alternate float forming an equal opposite angle to the axis with the float next adjoining, the plane of the edges of each float or bucket crossing the edge plane of the adjoining bucket at mid-length of the wheel, and in the construction and arrangement of wheel-arms which adapt them to the buckets so arranged.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
1	ENGLISH CHANNEL—Channel Islands—Casquets	Alteration of Light—New Siren Trumpet
2	ENGLAND—East Coast—Flamborough	Alteration of Fog Signal—Rockets
3	„ St. George's Channel—Smalls Lighthouse	Proposed Alteration in Fog Signals
4	„ West Coast—Burnham Lights	Alteration in Light and Gore Buoy
5	NORTH SEA—Kattegat and Baltic	Proposed Lights, &c.
6	NETHERLANDS—North Sea Ship Canal	Change in signification of Tidal Signals
7	BALTIC—Prussia—Swinemünde	New Light and Fog Signal
8	„ „ Funkenhagen	New Light
9	FRANCE—West Coast—Lorient	New Leading Lights
10	BLACK SEA	Lights Extinguished
11	AFRICA—West Coast—Lagos	New Harbour Light
12	INDIAN OCEAN—Seychelles—Mahé Islands, Port Victoria	Sailing Directions and Cautions
13	EASTERN ARCHIPELAGO—Sunda Strait—Flat Point	Proposed Light
14	„ „ Baly Island—Sangsit	New Harbour Light
15	„ „ Celebes Island—Gorontalo	Proposed Harbour Light
16	„ „ Timor Island—Koepong	Proposed Harbour Light
17	NEW ZEALAND—Cook Strait—North Brother Island and Mana Island	New Light on Brother Id., and Discontinuance of Mana Light
18	UNITED STATES—West Coast—Columbia River	New Leading Lights in Dredged Channel
19	„ N. Carolina—Pamlico Sound—Brant Shoal	Re-establishment of Light
20	„ Long Island Sound—Middle Ground	Alteration of Lights

NAUTICAL NOTICES.

1.—ENGLISH CHANNEL.—*Channel Islands.*—*Casquets.*— With reference to Notice 102, p. 506, of *Nautical Magazine*, volume for 1877, on the alteration in Casquets lights, and intended fog signal, the arrangements for producing the light being completed, the flashing light (*triple, half minute*) is now visible around the horizon. The light shows three successive flashes of about *two seconds'* duration each, divided by intervals of about *three seconds* of darkness, the third flash being followed by an eclipse of about *eighteen seconds*. Also, during thick and foggy weather, a powerful

Siren trumpet will give *three blasts* of *two seconds'* duration each in quick succession, *every five minutes*.

2.—ENGLAND.—*East Coast*.—*Fog Signal at Flamborough*.—On and after the 1st January, 1878, Rockets, for the production of sound, will be substituted for the gun, as the fog-signal at Flamborough. During fog and in thick weather, a rocket,—which, on reaching an altitude of about 600 feet, will explode with a loud report,—will be discharged every *ten minutes*.

8.—ENGLAND.—*West Coast*.—*St. George's Channel*.—*Smalls Lighthouse*.—*Fog Signals and Call Rockets*.—During the present winter it is intended to use, in addition to the bell, a new sound signal, to be discharged by night or day, in thick and foggy weather, from the lighthouse. This signal will consist of a portion of gun cotton in a rocket head, and will be exploded at a considerable elevation, *every half hour*; and having but little light, its effect will more closely resemble that of a gun than of an ordinary rocket. Mariners and others are requested to observe that it will *not* be a summons for assistance, but only an indication of the position of the lighthouse, when it, or the light therefrom, is obscured by weather. In the event of assistance being wanted at the lighthouse, or by vessels in distress visible therefrom, the call will be a rocket of great brilliancy, showing a magnesium flame in its downward course as well as a vivid rising trail; and that this call rocket, which will be only used in clear weather and at night, will be fired at frequent intervals.

4.—ENGLAND.—*West Coast*.—*Bristol Channel*.—*Burnham Lights*.—The Gore buoy having been moved 3 cables to the northward, the red shade in the low lighthouse at Burnham has been moved up to cut the said buoy on a bearing from the light of W. by N., the southern limit of the red colour being nearly W. $\frac{1}{2}$ N. The lights in line are white, and lead two cables to the northward of the Gore buoy. The outer limit of the red sector up the river now clears the landing stage, and leads up to High Bridge River Point buoy.

5.—NORTH SEA.—*Kattegat and Baltic*.—It is intended during the year 1878 to establish the following lights and Beacons in the North Sea, Kattegat and Baltic :—

Horn Reef.—A vessel showing a *revolving* light—flash every 30 seconds. To be moored in 17 fathoms off the west end of the reef. The vessel will be provided with a fog siren.

Borbiery.—A white tower showing a *fixed* light, visible 20 miles. Lat. $56^{\circ} 31' N.$, long. $8^{\circ} 6' E.$

Hirtshals.—A fog siren at the lighthouse, to give two powerful blasts in quick succession every two minutes.

Skaw Point.—A vessel showing a *revolving* light flashing *red* every 30 seconds, and carrying a fog siren which will give one powerful blast every two minutes. To be moored in about 20 fathoms, outside the buoy at present guarding the reef.

Lim Fiord.—Two *fixed* lights on point Egense Kloster. When in one they will lead over the bar in the deepest water. Lat. $56^{\circ} 58' 8'' N.$, long. $10^{\circ} 18' 8'' E.$

The Sound.—The *fixed* lights at present shown in Kronborg Castle will be altered to a *fixed* light flashing *red* every 30 seconds. It will be visible 12 or 15 miles.

Two *red* lights close to the Northern end of Dragor town, which when in one will lead through the north end of Holländer Deep.

A *fixed* light showing a *red* flash every 30 seconds at the Nordre Rose reef. Lat. $55^{\circ} 38' 10'' N.$, long. $12^{\circ} 41' 26'' E.$

Two *fixed red* lights at Provstenen battery. When in one they will lead between the Middel Ground and Middel Pulten.

Two *fixed red* lights on Tre Kroner battery. When in one they will lead through the middle of Konge Deep.

Sterns Cliff.—A light *revolving* every 30 seconds will be shown from a new tower, at 209 feet above the sea, and visible 20 miles. The light at present exhibited will be discontinued.

6.—NETHERLANDS.—*North Sea Ship Canal.*—With reference to various Notices in *Nautical Magazine*, 1877, on the establishment of tidal signals at the canal entrance (Ymuiden), Noordzehen, the signals then established are still used, but from 1st November, 1877, each signal will indicate $8\frac{1}{2}$ feet more water than formerly.

7.—BAL TIC—*Prussia*—*Light and Fog Signal at Swinemünde.*—A light is now exhibited from a new beacon tower, on the Eastern mole head, entrance to Port Swinemünde. It is a *fixed red* light,

elevated 42 feet above high water, and visible 10 miles. The beacon tower, 47 feet high, constructed of iron and painted red, is pyramidal in shape, octagonal sided, and surmounted by a dome. Position, as given, lat. $53^{\circ} 55' 55''$ N., long. $14^{\circ} 17' 20''$ E. In thick and foggy weather a bell will be sounded.

8.—BAL TIC.—*Prussia*.—*Light near Funkenhagen*.—With reference to Notice 28, p. 106, of volume for 1877, on 1st January, 1878, a light will be exhibited from the lighthouse, recently erected, near Funkenhagen. It will be a *fixed white* light, elevated 164 feet above the sea, and visible 19 miles. The lighthouse, 147 feet high, is situated close to the shore, and about 11 miles eastward of Colberg light. Position, lat. $54^{\circ} 14' 40''$ N., long. $15^{\circ} 52' 5''$ E.

9.—FRANCE.—*West Coast*.—*Port Lorient*.—*Lights at Kéroman Creek and in Kernevel Bay*.—Two leading lights have been established at Kéroman creek, port Lorient. The high light is a *fixed red* light, shown from the keeper's dwelling, elevated 44 feet above high water, and visible 9 miles. Position, lat. $47^{\circ} 44' 5''$ N., long. $3^{\circ} 22' 15''$ W. The low light is a *fixed green* light, shown from a hut constructed of sheet iron, situated S. 12° W., 372 yards from the high light; elevation, 10 feet above high water, and visible 8 miles. These lights in line lead between Ture bank and the shoal ground extending from the western shore.

Also, two leading lights are now exhibited in Kernevel bay, port Lorient. The high light is a *fixed red* light, shown from the keeper's dwelling, elevated 30 feet above high water, and visible 9 miles. Position, lat. $47^{\circ} 42' 55''$ N., long. $3^{\circ} 22' 35''$ W. The low light is a *fixed green* light, shown from a hut constructed of sheet iron, situated N. 54° E., 328 yards from the high light; elevation, 5 feet above high water, and visible 8 miles. These lights in line indicate the channel from their intersection with the line of Kéroman leading lights, to the anchorage of Penmané.

Note.—These leading lights (1 and 2) will be visible only through an arc of about 16° on each side of the mid-channel courses, and will diminish in brilliancy as those lines are receded from. Vessels entering port Lorient at night, and proceeding to the inner harbour, should keep the fixed white lights of Lorient church-tower and La

Perrière in line until Kéroman leading lights come in line, when those lights should be steered for until Kernevel lights appear in line a-stern for leading to the anchorage of Penmané. The fixed white light of the landing-place at Lorient is also a guide to the anchorage at Penmané.

10.—BLACK SEA.—*Caution*.—The lights on Cape Kaliakra, Cape Shablah, Cape Kustenjah, and Kustenjah jetty are not at present exhibited. The beacon on the tumulus north-westward of Kustenjah has been removed. The entrance to the Sulina mouth, Danube river, is endangered by torpedoes.

11.—AFRICA.—*West Coast*.—*Light at Lagos*.—Pending the erection of a lighthouse, a harbour light is now exhibited from a mast on the beach eastward of the lagoon at Lagos. It is a *fixed red* light, elevated 47 feet above high water, and visible 7 miles.

12.—INDIAN OCEAN.—*Seychelle Islands*.—*Mahé Island*.—*Port Victoria*.—With reference to Notice 117, p. 510, *Nautical Magazine* for 1877, the following *directions* have been issued:—Entering St. Anne's road at night, give the N.W. point of St. Anne's island a berth of 600 yards and steer S.W., taking care to keep the port Victoria light (*red fixed*) between the bearings of S.W. by W., and S.W. by W. $\frac{1}{2}$ W., until the south point of St. Anne's bears E.S.E., then steer S.W. $\frac{1}{2}$ S., magnetic, and anchor with the light bearing between W.S.W. $\frac{1}{4}$ W. and W. by S. With the light between these latter bearings the channel for entering port Victoria (Inner harbour) will be open, but should never be attempted by strangers at night without a pilot. *Moorings* have been laid down for the Messageries Maritime steamers at the entrance to port Victoria, and an iron buoy, painted red, supports the bridles, from which the lighthouse bears S. 55° W. 666 yards. Ships anchoring in the vicinity of this buoy should give it a berth of 100 yards to avoid fouling the moorings, the anchors for which are placed east and west nearly. Variation, 4° 30' W. in 1877.

13.—EASTERN ARCHIPELAGO.—*Sunda Strait*.—*Sumatra*.—*Light on Flat Point*.—It is intended to establish a light on Flat point (Pamantyass), north west entrance point of Sunda strait. It will be a *flashing* light, showing *three flashes* in quick succession every half minute, followed by a short eclipse.

14.—EASTERN ARCHIPELAGO.—*Baly Island.—North Coast.—Light at Sangsit.*—A *fixed red* harbour light has been established at Sangsit (Pabejan), Baly island.

15.—EASTERN ARCHIPELAGO.—*Celebes Island.—East Coast.—Light at Gorontalo.*—It is proposed to establish a harbour light at Gorontalo, Celebes island. It will be a *fixed red* light, shown from an iron post 26 feet high.

16.—EASTERN ARCHIPELAGO.—*Timor Island.—West Coast.—Light at Koepang.*—It is intended to establish a harbour light at Koepang, Timor island; it will be a *fixed red* light, shown from an iron post 39 feet high.

17.—NEW ZEALAND.—*Middle Island.—Cook Strait.—Light on North Brother Island, and Discontinuance of Mana Island Light.*—With reference to Notice 245, p. 916, of *Nautical Magazine*, 1877, the light on the Northern of the Brothers islands, west side of Cook strait, is now exhibited; it is a *flashing white* light of the second order, showing a flash *every ten seconds*, elevated about 258 feet above the sea, and visible 22 miles. From the lower part of the tower, a *fixed red* light will be shown in the direction of Cook rock, visible through an arc of 5°. The light tower, 28 feet high, is built of wood and painted white. Position, lat. 41° 6' 30" S., long. 174° 27' 15" E.

Note.—On the exhibition of Brother island light, the *fixed white* light on Mana island, east side of Cook strait, was discontinued.

18.—UNITED STATES.—*West Coast.—Columbia River, Oregon.—St. Helen's Bar Range Lights.*—Two *red* lights are now shown to guide through the channel recently dredged in St. Helen's Bar, Columbia River, Oregon. The lights are shown from tripods placed on shore near the town of St. Helen's. The front tripod is 20 feet high; the rear, 40 feet.

19.—UNITED STATES.—*Pamplico Sound, North Carolina.—Brant Island Shoal Light.*—The lighthouse, destroyed by fire in 1876, having been rebuilt, the new structure, a screw-pile lighthouse, square in plan, stands in 7 feet water, and shows a *fixed white* light illuminating the entire horizon. The house is coloured white; the foundation piles, roof of house, and lantern, brown. A

fog-bell, struck by machinery, will be sounded in foggy weather at intervals of 20 seconds. Lat. $35^{\circ} 8' 6''$ N., long. $76^{\circ} 17' 39''$ W.

20.—UNITED STATES.—*Long Island Sound*.—*New York*.—*Light on Middle Ground*.—*Stratford Shoals*.—This light is now shown from the new structure recently erected on Middle Ground, Stratford shoals, Long Island sound. The apparatus is arranged to produce alternate *red* and *white flashes* at intervals of 30 seconds, with short periods of total darkness intervening; elevation, 63 feet above the sea, and visible $13\frac{1}{2}$ miles. The structure is a granite dwelling resting on a pier, and surmounted by a tower and lantern. A fog-bell, struck by machinery, will be sounded during thick weather, giving three blows in quick succession every 30 seconds. *The Stratford Point Lightship will be discontinued*. The approximate position of the lighthouse, as taken from the Coast Survey Charts, is as follows:—Lat. $41^{\circ} 8' 32''$ N., long. $73^{\circ} 5' 45''$ W. Magnetic bearings and distances of prominent objects are as follows:—Stratford Point lighthouse, N. $\frac{1}{4}$ E., $5\frac{1}{2}$ nautical miles; Old Field Point lighthouse, S. by W. $\frac{1}{4}$ W., 5 nautical miles.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY.

No. 26.—CHINA SEA DIRECTORY, Vol. III., Notice 7, Pih-Quan Harbour.

No. 27.—AUSTRALIAN DIRECTORY, Vol. I., Notice 2, Australia, South Coast, Murray River.

No. 28.—SOUTH AMERICA PILOT, Part I., Notice 6, Bank of Soundings off the East Coast of Brazil.

OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1877.

(This list is completed to the 18th of each month.)

62. *Cairo*; built at South Shields, in 1857; converted to sailing ship, in 1874; Liverpool; tonnage, 1,490 and 1,443; cargo of gunpowder; left London on November 16, and not heard of after December 28, 1874. Inquiry held at Westminster, on May 30, June 1, and December 4, 1877, before Rothery, Wreck Commissioner. Harris and Nicolas, N.A. No direct evidence as to cause of loss, but gunpowder stowed too near galley and condenser fires.

136. *Black Watch*, wood; built at Windsor, Nova Scotia, 1877; owned by Mr. B. Smith and others, of Windsor; tonnage, 1,318; Bremerhaven to New York; ballast; stranded on Fair Island, September 19, 1877. Inquiry held at Liverpool, before Rothery, Wreck Commissioner. Aplin and Wilson, N.A. Casualty due to error of judgment. Master cautioned. Certificate returned.

138. *Richmond*, s.s., iron; built at Wallsend, 1871; owned by C. Mitchell and others; tonnage, 769; Antwerp to Newcastle; ballast; stranded on Hasbro' Sand, September 23, 1877. Inquiry held at Hull, December 6, 1877, before Travis, Stip. Mag. Knox and Castle, N.A. Master in default for negligent navigation. Certificate suspended for 3 months.

141. *Lufra*, s.s., iron; built at West Hartlepool, 1872; owned by Mr. R. Ropner and others, of Hartlepool; Hartlepool to Cronstadt; ballast; stranded in the Gulf of Finland, September 4, 1877. Inquiry held at South Shields, November 7, 1877, before Yorke, Stip. Mag. Hight and Knox, N.A. Casualty due to master's neglect in not being on deck. Master severely censured, but his certificate was returned.

144. *Marion*, wood; Newcastle; owned by Mr. A. M. Cohen and others, of Newcastle; built at Calcutta, 1833; tonnage, 756; Tyne to Quebec; coals and bricks; lost on the North Coast of Newfoundland, August 30, 1877. Inquiry held at South Shields, October 31, 1877, before Yorke, Stip. Mag. Hight and Knox, N.A. Master exonerated, and certificate returned.

147. *Neptune*, s.s., Glasgow; owned by J. and P. Hutchinson, of Glasgow; tonnage 499 and 238; Bordeaux to Dublin and Belfast; general cargo; stranded on the Nianeu Bushes Shoals, October 9, 1877. Inquiry held at Glasgow, November 17, 1877, before Graham and Warren, J.P. Forster and Jones, N.A. Master not responsible. Second mate's certificate suspended for twelve months, for having altered the vessel's course without orders.

149. *Agil*, barquentine; wood; built in Norway, 1868; owned by Thomas Foley, of Charlottetown; tonnage 216; Copenhagen to Charlottetown; ballast; lost at Greenholm, Orkney, October 5, 1877. Inquiry held at Aberdeen, November 16, 1877, before Thomson and Lumsden, J.P. Ward and Nicholls, N.A. Master in default for not taking measures for safety of the ship. Certificate cancelled.

151. *Rowland*, s.s.; iron; built at Sunderland in 1875; owned by R. Mawson and others; tonnage 1229 and 799; Montreal to Queenstown; wheat; lost on the north-east bank of Peter River, Holyrood Bay, Newfoundland, September 19, 1877. Inquiry held at Liverpool, November 20 and 21, 1877, before Rothery, W.C. Aplin and Wilson, N.A. Casualty due to negligent navigation. Master's certificate suspended for six months. Chief officer reprimanded.

155. *Wancoma*, wood; built at Milwaukee, U.S., 1863; owned by S. Morrison, of Belfast; Belfast to Charlestown; ballast; stranded at Roddans, County Down, October 20, 1877. Inquiry held at Belfast, November 18, 1877, before O'Donnell, Stip. Mag. Holt and Castle, N.A. Master in default for negligent navigation. Certificate suspended for six months.

157. *Damietta*, s.s.; iron; tonnage, 649 and 434; owned by Mr. Pease, of Darlington, and Mr. Harris, of London; Dantzic to Stockton-on-Tees; wheat; abandoned and lost 45 miles N. by E. of Tynemouth, October 15, 1877. Inquiry held at London, November 14, 1877, before Rothery, W.C. Aplin and Harris, N.A. Casualty due to insufficiency of shifting boards, for which the master was partly to blame, but as the Board of Trade made no charge of this nature, his certificate was returned.

158. *Ayton*, s.s., of London; iron; built at Sunderland, 1876;

owned by Mr. J. S. Barwich and others, of Sunderland ; tonnage, 1,504 and 970 ; Port Said to Patras ; ballast ; stranded between Kaufkalida Island and Cape Glarenza, coast of Greece, October 12, 1877. Inquiry held at London, before Rothery, W.C. Visconti and Beasley, N.A. Master in default for improper navigation. Certificate suspended for 6 months.

159. *Julia*, wood ; built at Llanelly, 1856 ; owned by Mr. A. Stone, and others ; tonnage, 172 ; Glasgow to Paramaribo Surinam ; general cargo ; lost on Laggan Rock, Wigtownshire, October 25, 1877. Inquiry held at Glasgow, November 12, 1877, before McLean and Reid, J.P. Forster and Jones, N.A. Master in default for negligence ; certificate suspended for 12 months. Mate intoxicated ; certificate cancelled.

160. *Liffey*, iron ; built at Southampton, 1876 ; owned by Mr. J. Nourse, of London ; tonnage, 1,402 and 1,338 ; Mauritius to Calcutta ; ballast ; lost at the entrance to Kudah Huah Du Channel, Maldiv Islands, August 3, 1877. Inquiry held at London, November 24, 1877, before Rothery, W.C. Castle and Pickard, N.A. Casualty due to master's negligence. Master severely reprimanded, and warned to be more careful in future.

163. *Medina*, barque ; built at Quebec, in 1851 ; owned by Thomas and George E. Henderson, of South Shields ; tonnage, 866 ; Sunderland for Carthage ; coals ; stranded on Coast of Morocco on October 15, 1877. Inquiry held at South Shields, November 28, 1877, before Yorke, Stip. Mag. Holt and Ward, N.A. Master guilty of negligent navigation. Certificate suspended for 3 months.

164. *Inch Kenneth*, ship, of Glasgow ; built at Partick ; owned by D. and W. Henderson & Co. ; tonnage, 1,119 and 1,074 ; Calcutta to Hull ; wheat and linseed ; vessel capsized, August 23, 1877. Inquiry held at Glasgow, December 4, 1877, before Pollok and McLellan, J.P. Hight and Grant, N.A. Casualty due to insufficient ballast in bottom of vessel.

166. *Albanian*, s.s., of Liverpool, and *Nydia*, sailing ship, of Liverpool ; collision off Great Ormes Head, November 18, 1877 ; both vessels and three lives lost. Inquiry held at Liverpool, December 8, 1877, before Rothery, Wreck Commissioner. Forster

and Wilson, N.A. Collision due to third mate in charge of *Albanian* in not taking measures to get out of *Nydia's* way. Certificate cancelled.

Magnet, of Dundee, wood; built at Montrose, 1862; owned by Mr. A. Edwards, of Dundee; tonnage, 236; stranded in Pernau Bay, Russia, September 1, 1877. Inquiry held at Aberdeen, November 9, 1877, before Corbet and Grant, J.P. Ward and Nicolas, N.A. Master in default for leaving deck in charge of improper person. Master's certificate suspended for 8 months.

OFFICIAL INQUIRIES ABROAD.

Robina Dunlop, barque, Glasgow; lost at the mouth of the Taurakina River, on the Wanganui Coast, on August 18, 1877. Inquiry held at Wellington, August 29, 1877. Casualty attributable to the culpable negligence of the master. Master's certificate suspended for 2 years; chief officer deserving of severe censure.

Vine, schooner; Sydney; lost on Seal Rock Point, September 8, 1877. Inquiry held at Sydney, September 10, 1877. Master's conduct unsatisfactory. Reprimanded and cautioned to be more careful in future.

Feronia, ship; Liverpool; lost near the Portuguese Settlement of Din, July 23, 1877. Inquiry held at Bombay, October 11, 1877. Casualty caused by gross carelessness and neglect of duty on the part of the master. Certificate suspended for 10 months, and chief officer severely censured.

Charmer, ship; lost off Dyers Island, August 24, 1877. Inquiry held at Cape Town, September 18, 1877. Casualty due to want of precaution. Master's certificate suspended for six months, but recommended for a mate's certificate during that period.

Inch Kenneth, ship; lost on September 23rd, 1877. Inquiry held at King William's Town, October 25, 1877. Casualty not caused by wrongful act of master or officers.

Maggie, brigantine, of Charlottetown, Prince Edward's Island; abandoned at sea, October 22, 1877. Naval Court held at New York, November 3, 1877. Master justified in abandoning the vessel. Mate's certificate suspended for three months for drunkenness.

BOARD OF TRADE, MARINE DEPARTMENT, SEPTEMBER, 1877.—
INSTRUCTIONS TO SURVEYORS.—CATTLE-CARRYING SHIPS.—In consequence of a recent decision that it shall be the duty of the surveyors attached to the Marine Department of the Board of Trade to survey and inspect the vessels employed in the conveyance of cattle from ports in Ireland, the following instructions have been prepared for the information and guidance of the surveyors in the performance of this duty:—1. The Order by the Lord-Lieutenant and Privy Council of Ireland under which this inspection is called for is dated 6th March, 1873. The special provisions of this Order in Council to which the surveyor's attention is more particularly directed are contained in Parts 1 and 2 relating respectively to the "places used for animals on board vessels," and to the cleansing, disinfection, and ventilation of vessels. These clauses will be found appended to these instructions, together with an extract from the interpretation clause (4) of the Order. It is intended that the surveyors shall inspect the vessels in question periodically, when they shall, if they find such to be the case, give a certificate that the places used for the animals, the gangways, and the arrangements for ventilation, and in every other respect, are such as required by the Order in Council; the certificate shall also give the dimensions of the several spaces fitted up for the conveyance of "animals." It is further intended that the surveyors shall from time to time, as their other duties permit, visit the vessels and report whether or not the places and arrangements are in the state in which they were when the certificate before referred to was given. It is not intended that the surveyors shall enforce the penalties provided in the Order in Council, or be responsible for the number of animals actually carried upon any voyage, or for the cleansing and disinfection of the vessels on each voyage. If, however, the surveyors at any time have reason to believe that the state of efficiency as certified to on the periodical certificate has been departed from, it will be their duty to inspect and report the facts without delay to the chief officer of the Veterinary Department, in order that steps to enforce the Order may be taken by him. Forms for these several purposes have been prepared, and will be supplied upon application in the usual manner, viz. :—

Surveys C. 1.—Certificate that arrangements are as required by Order in Council. Surveys C. 2.—Report of occasional inspection. Surveys C. 3.—Notice to chief officer of Veterinary Department that arrangements are not as required by Order in Council. Specimens are annexed. In the performance of this duty the surveyors will take care that all ships carrying cattle from the port are inspected by them: 1st. Periodically—say, annually—when the certificate Surveys C. 1 should be issued as soon as everything is in a state to warrant the surveyor in signing it. This certificate is to be issued in duplicate; one copy is to be delivered to the master of the vessel, the other is to be sent to the Marine Department of the Board of Trade for transmission to the proper authorities. Upon the latter the surveyor is to make a note of the expenses incurred by him in making the inspection. 2nd. Occasionally, whenever the surveyor for any reason thinks such a course desirable. The result of this occasional inspection is to be recorded in the Form Surveys C. 2, which should be forwarded to the Board of Trade. If the Order in Council has not been complied with, a duplicate, Surveys C. 2, must, in addition to the above, be sent to the chief officer of the Privy Council Veterinary Department in Dublin, with the covering notice (Surveys C. 3), in order that he may take such steps as may be right under the circumstances. Whenever a vessel is visited, whether for periodical or occasional inspection, a report, Surveys C. 2, must be sent to the Board of Trade, except on the occasion when the certificate Surveys C. 1 is issued as the result of the visit, *i.e.*, no visit must be made under these instructions without a form of one kind or the other being sent to the Board of Trade showing the result. The travelling expenses of the surveyor (charged at the authorised Board of Trade rates) should be claimed as usual on his diary. Care should be taken to specify clearly the service, and that the amounts correspond with those entered on the forms. In the case of cattle-carrying vessels trading otherwise than regularly from the port, the surveyor will first ascertain whether the vessel has an unexpired certificate, Surveys C. 1, granted by one of the Board's surveyor's, and will govern his action as to occasional or periodical inspection accordingly. The surveyors will extend their

action under these instructions to all ports within their districts or sub-districts, and will make such arrangements as may be necessary with the officers of Customs to get immediate information of the cattle-carrying vessels which leave such ports, so that none may be neglected.

—T. H. FARRER, Secretary ; THOMAS GRAY, Assistant-Secretary.

INSTRUCTIONS TO SURVEYORS OF STEAM SHIPS, EMIGRATION OFFICERS, AND SUPERINTENDENTS OF MERCANTILE MARINE OFFICES.—SURVEY AND DESPATCH OF SHIPS ON SUNDAYS, OR OUT OF OFFICE HOURS.—The Board of Trade have recently given their careful consideration to the question of the employment of their officers out of official hours, with reference to the previous Circular 641 on this subject, which is hereby cancelled. It may happen, that the refusal to grant a clearance or to make or complete an inspection out of office hours would inflict serious loss upon the ship and cause serious inconvenience to all concerned. In such cases the Board of Trade have decided that, if the office arrangements will permit, the surveyors are not justified in refusing to make or complete the survey of a ship, or to clear a ship, on Sunday or out of the usual office hours. It is highly desirable, however, that the practice should be restricted as much as possible ; and the following regulations have been prepared with the view on the one hand to keep exceptional cases within due limits, and on the other to afford the public the requisite facilities for carrying on their business. If the usual three clear days' notice has been given of the survey or inspection, and the official arrangements have not allowed of the work being done within office hours, no overtime fee is chargeable. Whenever surveyors are called upon to perform these extra services, application should be made by the owners or their agents to the principal officer of the district or the senior surveyor of the port, on the Form Surveys No. 22, a copy of which is enclosed. This officer will, if he approve of the application, fill up Division B. of the form, and return it to the owner ; he will also give the requisite instructions for the survey or inspection. The necessary fee, according to the following scale, should then be paid to the Superintendent of the Mercantile Marine Office :—On week days, from 8 a.m. to 10 a.m., and 4 p.m. to 6 p.m., £1 per hour ; from 6 a.m. to 8 a.m., and 6 p.m. to 8 p.m.,

£2 per hour ; before 6 a.m. and after 8 p.m. £4 per hour. On Sundays, £4 per hour. A service occupying less than an hour will be charged for as one hour, according to the scale. In services exceeding one hour, a quarter fee will be charged for every quarter or part quarter of an hour, according to the scale. The office hours for the purposes of this circular are from 10 a.m. to 4 p.m. Time spent in travelling is not to be deemed overtime. The payments are in no case to be made to the officer or surveyor himself, but to the Superintendent of the Mercantile Marine Office, by whom they are to be brought to account in a separate column in Schedule 5. The surveyors are instructed that they are not in any case to perform overtime work (whether work for which overtime fees have been paid or otherwise) without recording the extent of the time so employed in their diaries ; and where fees are chargeable they will also be careful to see that the amount is recorded, in order that, if by any chance it has not already been recovered, the owners may be called upon for payment.—EDWARD STANHOPE, Secretary ; THOMAS GRAY, Assistant-Secretary.

INSTRUCTIONS TO SURVEYORS.—A new form of Survey 6a., and of declaration, are forwarded for the information of surveyors. In granting future declarations for home trade passenger steamships, the surveyors are to be guided by the following instructions. See forms attached :—

Marking.—*Deck or third class passengers.*—Each and every section or part of the ship intended for deck passengers, whether on deck or below, is to be described shortly in the form of application for survey, and the number and class of passengers each such section or part is intended to accommodate when free from cattle, animals, cargo, or other incumbrance, is to be stated. The surveyors should measure the ship in sections or parts, as set forth in the application for survey, taking care that some mark or conspicuous object indicates the limits of each space which is measured separately. The deck space is always to be measured from *abaft* the windlass (as at present) to a mark, which in paddle steamers shall be placed over the shaft, and in other vessels shall be an arbitrary line marked vertically on the house or bulwarks amidships, or as near thereto as convenient. From this mark aft the

deck space is to be measured as far as the deck passenger accommodation extends, whether to a break or raised quarter-deck, to a poop, or the entire after-length of the deck to the wheel, as the case may be.

First or second class passengers.—Spaces on deck for either first or second class passengers are to be conspicuously marked and measured in a similar manner.

Marking.—The marking of spaces for passengers carried on deck is to include a statement of the number of passengers allowed for each space when there is no deck cargo or other incumbrance on it. Saloons and cabins for first-class passengers need not be marked, as the particulars can be seen on the certificate.

Waterclosets.—Closets are to be provided for the exclusive use of deck passengers in the ratio of three for every 200 deck passengers, allowed by the passenger certificate, and a fair proportion are to be allotted to the sole use of women and children, and so marked outside. Clear passages to these closets must always be maintained. In no case is a less number than two to be provided. These closets should be well lighted and drained, and of sufficient size, and effectually protected from weather and sea.

Cattle.—Under cover.—If cattle are carried under cover on the same level deck as passengers, they are to be separated by a moveable close bulkhead running athwart ships across the deck, and extending from the deck to the covering above.

On open deck.—If they are carried on the same level deck, and are not under cover, then the space occupied by the cattle shall be effectually shut off from the passenger space by bulkheads, wooden partitions, or otherwise. The partitions need not be close.

Deck shelter.—The number of deck passengers as certified on the passenger certificate for the summer months, in the ratio of 1 to every 9 square feet of the main and weather-deck, the cabin, or other measured spaces, are to be further limited to six times the number which the shelter space, consisting of either a house on deck, or a cabin below, will accommodate. Covered-in spaces, not consisting of a cabin or a deck-house, as above mentioned, are not to be passed in any steamships unless drawings are submitted and approved by the Board of Trade.

Quarter Decks, Poops, &c.—All spaces included on the upper surface of quarter-decks and poops are to be available for measurement, provided that the ship is stable enough, and the sides are either close boarded or otherwise sufficiently protected. If the sides are not close, proper weather cloths should be provided. The board are informed that surveyors in many instances measure in the floors of saloons, which is contrary to the intention of paragraph 76 of the instructions. The word *deck*, in line 4 of paragraph 76, means main or weather-deck, poop or quarter-deck, as the case may be, which is measured for saloon passengers. For the future, saloon floors are never to be measured except by the direct instruction of the Board of Trade.—EDWARD STANHOPE, Secretary ; THOMAS GRAY, Assistant-Secretary.—*Surveyors Circular*, No. 41.

These words are to be permanently marked during the time the passenger certificate is in force.

<p>The deck from this mark on both sides amidships to the raised quarter-deck* contains — square feet, and is certified for—†passengers when not occupied by cattle, animals, cargo, or other incumbrance.</p> <p style="text-align: center;">←</p>	<p>mark</p>	<p>The deck from this mark on both sides amidships to the windlass contains—square feet, and is certified for—† passengers when not occupied by cattle, animals, cargo, or other incumbrance.</p> <p style="text-align: center;">→</p>
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* Or to the poop, or the wheel, or any other part of the deck to which the measurement in question is taken.

† State the number and the class of passengers.

Raised Quarter Deck.—Mark on break of deck.

This quarter-deck contains — square feet and is certified for —* passengers when not occupied by cattle, animals, cargo, or other incumbrance.

* State number and class of passengers.

Poops.—Similar to raised quarter-decks.

SHIPMASTERS' SOCIETY.

Shipmasters' Society,
Jeffrey's Square, St. Mary Axe, London,
18th December, 1877.

To the Editor of the "Nautical Magazine."

DEAR SIR,—I forward copy of a letter which appeared in the *Newcastle Daily Journal*, on the 11th inst., and request that you will be so good as to insert it in your Magazine.

Yours faithfully,

B. F. CRAMER, *Secretary*.

"Hull, 8th December, 1877.

"Sir,—Having been before a Board of Trade inquiry held at this port, my case was most warmly and thoroughly taken up by the London Shipmasters' Society, of which I am a member.

"I was provided, at the expense of the Society, with legal advice and counsel during the time the inquiry lasted—viz., seven days, and was most ably defended.

"In gratitude to the Society, I think it right to bring this to the notice of the public and my brother shipmasters, in the hope that the Society may receive the support it so well merits. If you will insert this in your valuable paper, I should be greatly obliged.

"I am, &c.,

"(Signed) JAMES COWIE,

"Master s.s. *Richmond*."

[We have much pleasure in publishing the above letter; it shows that the Society desires to be practically useful in assisting its members.—ED.]


THE NAUTICAL MAGAZINE.

FORTY-SEVENTH YEAR.

VOLUME XLVII.—No. II.

FEBRUARY, 1878.

STEEL SHIPS.

OR some years past, naval architects have been looking forward to the period when steel would definitively take the place of iron in shipbuilding, and it is now said that we are on the eve of the change. When some years ago steel was talked of, which would take a breaking-strain of over 50 tons to the square inch, it was thought that ships might be built of half the weight of material required in the case of iron. The strong steel was tried and found to be altogether unreliable, plates with no perceptible fault would suddenly break after they had been riveted up in the ship, and altogether the material was pronounced to be of such uncertain character as to be unfit for shipbuilding. Since that time, however, another kind of steel has been introduced, and now vessels have been built of it for the Admiralty and for the merchant service, and recently the Committee of Lloyd's Register have issued a circular on the subject, giving the general conditions under which it may be used, and the percentage of reduction in the scantlings for iron ships which may be allowed when steel is substituted for iron. It is now said that *mild* steel may be made as reliable as wrought-

iron, but the idea of doing with half the weight of material and having a breaking-strain of 50 tons to the square inch has been abandoned; the steel now used takes a breaking-strain of about 27 tons, and a reduction of 20 per cent. in scantlings is the extent of what is to be allowed for it.

It may, perhaps, be as well for us to preface our remarks upon the question of steel ships by a few words upon the difference between iron and steel, or rather the metal to which the latter term has hitherto been applied. In most of the methods in use for extracting iron and steel from the ores, the first part of the process has had for its object the production of pigs of cast-iron. This is only of use for castings; it cannot be welded or otherwise worked, owing to the presence of impurities of which the chief are silicon, sulphur, phosphorus, and carbon. These substances are found in very variable proportions in cast-iron, the last named, however, usually constitutes 2 to 5 per cent. Wrought-iron is mostly obtained from cast-iron by processes having for their object the removal of these substances, the name "wrought-iron" being restricted by metallurgists to the metal capable of being welded and containing less than $\frac{1}{100}$ per cent. of carbon. Even when there is more than $\frac{1}{100}$ per cent. of carbon, the metal is spoken of as a "steely" iron. The process by which wrought-iron has usually been produced from cast-iron, is known as "puddling," the pigs are melted in a furnace where they are apart from the fuel, and the fluid mass is exposed to the action of oxygen, partly obtained from the air, partly by having stirred up with it powdered iron ore, rich in oxygen. The temperature of the puddling furnace is so moderated that the iron, as it is freed from its impurities, becomes pasty and then solidifies, the melting point of pure iron being much higher than that of the alloys which constitute pig-iron. The process of puddling has usually been accomplished by manual labour, and the wrought-iron which is drawn from the furnace in the shape of balls is not of the same character throughout, owing to its having been produced in a pasty condition. The presence of cinder and other imperfections, is also said to cause that want of homogeneity which produces the appearance of "grain" or fibre in wrought iron. The fibre is of course drawn out by the

subsequent processes of hammering and rolling, by which plates and angle irons are manufactured from the puddled balls. The term *steel* has been applied to an alloy of iron intermediate in character between wrought-iron and cast-iron. In works on metallurgy, it is usually stated that when iron is alloyed with carbon to the extent of over three and under eighteen or twenty parts in the thousand, the metal takes the name of steel. The characteristic properties of steel, however, are, that it is malleable like wrought-iron, and that if it be heated, and then plunged into a cold fluid, it is hardened by such treatment, in other words it can be *tempered*. The quality of steel is more injuriously affected by the presence of impurities than is that of wrought iron. Thus it is stated, that pure steel, with as much as three per cent. of carbon, is a malleable metal, but Bessemer steel, in which there is present but a very small proportion of silicon, is not malleable when the percentage of carbon exceeds two. For this reason it has been usual to make steel from wrought-iron, the metal being first decarburised and purified, and then a proportion of carbon reintroduced. The best kinds of steel are so made now, and previous to the introduction of the Bessemer process, all steel made in England was made from wrought-iron. In the Bessemer process steel is made directly from pig-iron, which is melted and run into a large heated vessel called a "converter" where a blast of air is passed through it, and the carbon and silicon are thus burnt out. When this is accomplished, a quantity of *speigeleisen*, a cast-iron which contains a definite percentage of carbon, and which at the same time is free from deleterious matters, is introduced in a molten state, and the mixed metal is then cast in moulds. A material can thus be produced with any required percentage of carbon. Latterly, a specially prepared alloy, known as ferro-manganese, has been used in place of *speigeleisen* in the manufacture of some kinds of steel. In another method, known as the Siemens-Martin process, steel is made from pig-iron, *speigeleisen*, and steel or iron scraps in a special kind of furnace called the "Open Hearth," the distinguishing peculiarity of which is that the flame of coal-gas is made to play upon the metal. This process is much slower than the Bessemer, and was at one time thought to be more exact, it being practicable to take out samples

of the metal from time to time, and ascertain its degree of carburization. The metal known as *mild steel*, the employment of which in shipbuilding is the subject of this article, was first manufactured for shipbuilding purposes by the Siemens-Martin method, and it was said that the necessary exactness in composition could not be secured by the Bessemer process, but it is now made in both ways with equally good results. At some steel works both methods are adopted, and we may suppose the cost of production, and the material produced, are the same in each case, from the fact that in one parcel of plates, specimens of both processes are frequently mixed.

If the name *steel* be restricted to metal containing the percentage of carbon mentioned, or to metal capable of being tempered, the so-called "mild steel" is not steel at all, but is really a kind of wrought-iron manufactured by the same process as steel, differing from ordinary wrought-iron by its greater purity, and by being homogeneous, that is by having no *grain*. Instead of being refined in a pasty form, it is refined as a liquid and cast in ingots, and the names "ingot iron" and "homogeneous iron" have both been proposed for it, but it has received the name of "mild steel," and appears likely to keep it. The proportion of carbon in *mild steel* is said to be generally less than $\frac{1}{100}$ per cent., and very rarely as much as $\frac{2}{100}$ per cent., while puddled wrought-iron frequently contains $\frac{2}{100}$ per cent. of carbon. Some manufacturers attribute the peculiar qualities of the metal to the presence of manganese; others say that although manganese is most useful in the progress of manufacture, it is often almost absent in the finished metal, and when present is of no benefit to it. There is, however, so much diversity of opinion, that all that can be said with certainty is that a metal has been produced in large quantities by modifications of methods used to manufacture steel, that this metal is homogeneous, being equally strong in every direction, and that it has a higher breaking strain than any variety of commercial wrought-iron. It would appear then that after all we have not yet obtained a real ship-steel, but only a superior iron made by steel process, and called by courtesy *mild steel*.

Our own Admiralty may claim the credit of introducing mild

steel for shipbuilding purposes in England. The French Government had used steel in the construction of ironclads; and in 1874 Mr. Barnaby, of the Admiralty, visited the French dockyards and inspected several ships which were being built of it. The masted ironclad *Redoutable* was then building at L'Orient, and in her, steel was used for frames, beams, deck plating, plating behind armour and inner bottom; while the outer bottom plating and the rivets were of iron. The *Tempête* at Brest, and the *Tonnerre* at L'Orient, were also building, and steel was being similarly used in them, the steel for all these ships being manufactured at Creusot and Torre Noire. This metal took a breaking tensile strain of $30\frac{1}{2}$ to $31\frac{1}{2}$ tons per square inch, and the tested pieces elongated before fracture to the extent of 22 per cent. All the frames were bent by pressure, no iron hammers were used, and, if plates had been subjected to even light blows, they were immediately annealed. The cost of the angle steels was £27 per ton. A material which required to be so tickled with copper hammers, and was altogether of such a delicate character, was obviously unfit for shipbuilding, even in the Royal dockyards, where precautions might be possible which were altogether out of the question in a merchant ship yard. The solution of the difficulty was obtained in the production of a milder steel, which has been found by the Admiralty to be a thoroughly reliable material; but it must be observed that they have instituted a most rigid system of tests to make sure that not only every lot of plates, but every plate supplied to them is what it professes to be. The metal first used for the Royal Navy was manufactured by the Siemens process, at the Landore Works, near Swansea, and was employed in the building of the *Iris* and *Mercury* at Pembroke Dock. These ships are unarmoured dispatch vessels, of 3,750 displacement tons, and it was desired to build them of very light material, in order to obtain the high speed of $17\frac{1}{2}$ knots. They have longitudinal and transverse frames, and the bottom plating varies from $\frac{3}{8}$ inch to $\frac{1}{2}$ inch. All the shell of the vessel, with the exception of the heel, stem, sternpost, and rivets, is of steel. The screw shafting, which is hollow, is made of Whitworth compressed steel, and the barrel parts of the boiler shells are of mild steel. The frames were

bent hot, and afterwards annealed ; but the plates were, as far as practicable, bent cold. The Admiralty have now six corvettes, of which the *Comus* is the type, building on the Clyde, in which steel is used for the plating, the frames being of iron ; the masts also are to be of steel. Within the last year several merchant vessels have been laid down in which mild steel is to be largely used ; and Messrs. Thompson, of Glasgow, are now building a steel ship with steel rivets.

We have before adverted to tests instituted by the Admiralty for the purpose of securing uniformity in the material. It has always been the custom of the Admiralty to subject iron made for them to a series of rigid tests, which in the early days of their iron ship-building were carried out at the place where the vessels were built, and one clause of every contract with a shipbuilder was that he should provide on his premises an efficient testing machine. As a result of this the Admiralty are at present paying £15 to £16 per ton for (B) iron, used by them for shipbuilding, the market price of ordinary ship iron plates being less than half this amount. Besides the tensile test, hot and cold bending tests have been applied to both plates and angle irons. Of late years the tests have been made at the manufacturers, and have been conducted by inspectors appointed for the purpose. The Admiralty had thus at hand a staff and an organisation which could, with some extension, be made available for testing the new material. Their tests for mild steel have consisted of—

1. The tensile test, the minimum breaking strain per square inch to be 26 tons, the maximum 30 tons per square inch ; the elongation before breaking to be not less than 20 per cent. in a length of 8 inches.

2. That after having been heated and then cooled in water of a temperature not higher than 60° Fahrenheit, the steel shall stand bending to a curve of which the inside diameter is to be three times the thickness of the plate. A shearing is taken from every plate, not less than an inch and a-half wide, and tested in this manner.

We have seen a list of consecutive tests of steel for Admiralty vessels of the *Comus* class, comprising eighteen plates tested with

cuttings lengthwise and crosswise for tensile strength. The breaking strain was as often higher as lower for the crosswise cutting than for that taken lengthwise and varied from 25.6 to 32.8 tons per square inch; the elongations varied from 12 to 32 per cent., being for the most part well above the prescribed 20 per cent.

Turning now to the Mercantile Marine, and first to the action of Lloyd's Registry, we find that until November last there was no defined rule as to the employment of steel in shipbuilding, but each case was considered separately. In November, however, a report was published stating that a visitation committee had recently inspected the steel vessels building for the Admiralty, as well as others building for classification, and had also visited some of the leading steel works. As the result of their enquiries a circular was issued stating the conditions under which mild steel might be used as a material for shipbuilding. These are, first, that a midship section, &c., showing details of scantlings, be submitted in every case, and that tensile and other tests may be employed by the surveyors, every plate being supposed to take a minimum tensile breaking strain of 27, and a maximum of 31 tons to the square inch, with 20 per cent. of elongation previous to fracture. It was further prescribed that strips should, if heated and then cooled in water at 82° Fahrenheit, stand a similar bending to that of the Admiralty test.

In these requirements it will be noticed that the tensile strain is increased one ton, a difference justified by the practical results of testing. Further, it will be seen that an important feature of the Admiralty tests, the bending of a strip from *every* plate was omitted, the bending tests being only applied at the discretion of the surveyors. This omission was supplied by the issue of an amended circular on the 20th December, in which it is prescribed that all ship steel shall be marked by the manufacturers with a special brand, to indicate that strips from each plate so marked have been submitted to the bending test.

We cannot but think that the alteration in the amended circular was a wise and necessary measure. Former experience in metal made by steel processes has taught the naval architect that while

a parcel of plates may for the most part be of excellent quality, and capable of doing their work in the structure of the ship, others made by the same process, and which show no outward difference, may be very faulty, and what makes the matter still worse is the risk that the fault may not show out till the plate is riveted in the ship. Manufacturers have been pretty successful hitherto with the new metal, but there is much yet to be learned before the manufacturer can be certain of producing parcels of material uniform in quality, and the naval architect must have much more experience of it before he can with prudence consent to make reductions in scantlings proportioned to the claims as to strength put forward; indeed, before any reduction at all can be made there must be some guarantee such as the brand proposed, that pains have been taken to ensure that *every* plate possesses the distinguishing characteristic of mild steel. As over-stepping the limit of safety in any particular may involve the loss of the ship, we would commend the whole subject to the notice of the Board of Trade, and to such of its officers as have practical shipwright experience, who cannot at this juncture give too much attention to the properties of the new material with which they will certainly have to deal. In fact, to vessels which come under the Passengers Act the benefit of a reduction in scantlings will be of most advantage, and we may feel sure that in building vessels of this class the conditions will be frequently complied with, and any consequent reduction of scantlings taken advantage of.

The advantage given for the use of steel instead of iron is to be a general reduction of scantlings to the extent of twenty per cent., subject to modifications in each case, consequent upon special considerations. Assuming the minimum tensile strength of iron used in shipbuilding at 20 tons per square inch, and the strength of the new material at 26, a reduction of 23 per cent. in scantlings would secure the same strength; it will be found, however, that most mild steel will be over 28, and we think iron ship plate is often under 20; and it will thus be seen that the Register Committee have secured a good margin, and are, as is most desirable, on the safe side. Already, as might perhaps be expected, complaints have been made that this reduction is not as much as would fairly meet the case, and that

the requirements as to testing will cause much inconvenience. In the number of *Engineering* for 28th December last is a letter from a Clyde shipbuilder, in which he states that on a proposal for building a steel steamer the reduction of 20 per cent. was only granted for a portion of the structure, and that in some cases much less (14½ per cent. for the plating of bottom and sides) was allowed. He also complains of the regulations as to testing. The Committee have requested their surveyors to ascertain and report "as early as possible, what facilities exist in the yard of the builders of this vessel for carrying out the tests required by the Committee in accordance with the circular." The writer goes on to say that "Lloyd's Committee know well there is not a testing machine in one out of a hundred shipbuilding yards in the kingdom," and then exposes the inconveniences which must result from testing and rejecting plates after they have arrived on the shipbuilder's premises, and urges that if the tests are to be carried out at all, the best plan will be to provide for making them at the steel works.

The present provision for testing iron is contained in Section 3 of Lloyd's Rules for Iron Ships, and runs thus:—

"Section 3.—The whole of the iron to be of a good malleable quality, to be subjected to tests at the discretion of the surveyors. Brittle or inferior material to be rejected. All plates, beam, or angle iron to be legibly stamped in two places with the manufacturer's name or trade mark, and the place where made, which is also to be stated in the report of survey."

It would appear by this that no tensile tests were contemplated by the rules, and as a matter of fact, but little more has been usually done in the way of testing iron than observing the way in which the material stood punching and bending, during which process, if it were of very inferior quality some indications of its badness would certainly appear. If, however, mild steel is largely used in shipbuilding, a series of rigid tests must of necessity be applied.

A comparatively small variation in the quantity of carbon or the presence of impurities is all the difference between mild steel and the unreliable material made by the same process, and this

difference can, for practical purposes, only be ascertained by the tempering test which is to be applied to every plate, and which appears to be essential in steel shipbuilding. These tests must cause the market price of steel to be higher than would otherwise be the case, but there is no reason why it should be so much dearer than iron as has been anticipated. We believe the Admiralty have paid £15 per ton for their mild steel. That is less than they are paying for (B) ship plates, and we think there is every reason to believe that, with an increased demand, mild steel can be manufactured at a much lower rate. Its extended substitution for iron in shipbuilding will, of course, depend upon its price, whether it will be only so much dearer than iron, that the additional sum spent in first cost will be paid for by increased freight owing to the less weight of hull.

Another consideration connected with the use of steel for shipbuilding is its durability as compared with iron. Of this, little can be said at present. Experiments have been made to find out the extent of corrosion in salt-water of steel and iron, but it is difficult to reproduce the conditions which obtain in actual ships, and it may be said that we know nothing for certain on the subject. Obviously, corrosion is a more important factor in steel than in iron ships. In the former the material in the first instance being thinner, the same amount of wasting will reduce the strength by a larger percentage. We have heard that in some of the very thin steel steam-launches recently built for high speed, deterioration of the material has arisen from an unexpected source. It was observed that the plates were pitted outside the vessel, and as they were only a sixteenth thick the pitting was nearly through them. No cause could be assigned for it except that the black oxide which forms upon the plate in rolling was electro-negative with regard to steel-plates, and thus galvanic action was set up. This may, of course, be prevented by "pickling" the plates in a diluted acid, and so removing all the black oxide before using them. We have heard that the Admiralty, with a view to provide against galvanic action from this or other causes, intend to "galvanize," that is, coat with an alloy of zinc and iron, all outside plates for ships. They can thus make certain that while there is any zinc alloy left, no

galvanic action will affect the iron or steel ; the only question is, whether the coating process will not injure the metal in other ways.

The Admiralty have not yet used mild steel rivets. They have, however, been used in shipbuilding on the Clyde, and it is said with good results. In one respect they are said to be superior to iron rivets as they hold the heat longer. It is urged against their use that they are liable to be spoilt by being over-heated or "burnt," when they become brittle and lose their malleability. With reference to this, the report of Lloyd's surveyors points out that iron rivets may also be spoilt, although at a higher temperature, and there is this advantage with steel rivets, that they unmistakeably show when they are bad and cannot then be used at all. It would appear probable that steel rivets may be harder than iron ones, and would thus be liable to suffer from jarring strains, but we think on the whole it will be found best to use metal for rivets, of the same kind as the plates. One thing we would suggest ; seeing that galvanic action appears to take place between metals of but slightly different composition, it may probably occur between steel plates and iron rivets, and the result would be most serious.

The experience of the next few years will probably decide whether ingot iron made by steel processes will take the place of puddled iron as a material for shipbuilding. As the new material becomes better known it will become evident to what extent it may be trusted, and it is possible that our experience of it may justify a further step, the use of a decided steel with a high tensile strain as a material for shipbuilding. This must depend upon steel makers themselves ; whether they can give the shipbuilder a thoroughly workable material with high tensile strain at a moderate cost, and above all a material which can always be trusted. The naval architect has a higher responsibility than the designer of land structures in which faults detected may be remedied at once ; his work is subjected to severe and repeated strains, and must be capable of enduring them often for long periods. This is the reason why he will hesitate to use a material about which others may have no misgivings, and when he does use it, will exact good guarantees for its reliability.

Since the foregoing article was written, a further report of Lloyd's Special Committee has been published, from which we quote the following as enforcing our remarks upon the dangers attending the use of the new material unless every plate be tested :—

“ A most striking example was shown us at one of the works we visited, of the necessity for a bending test being applied to a shearing from every plate ; and it also afforded a proof that the best test to apply would be a temper test, instead of an ordinary cold test. The firm in question was at the time manufacturing both soft and hard steel-plates, and in passing through the rolls a hard plate became substituted for a soft one. After passing through the rolls the plates were annealed before being sheared, and when, after shearing, the hard plate came to be tested by the temper test, instead of the plate bending to the required curve, it broke off short. This led to the marks on the plate being examined, when the source of error was discovered. It had come from a charge capable of standing 36 tons to the square inch, and was never intended to be used for soft steel-plates.”

The Committee also urge the importance of the tensile tests being made with pieces of uniform length, the 20 per cent. elongation is to be in a length of 8 inches, and if shorter pieces be tested, the percentage of elongation should be greater, since the elongation is greatest near the point of fracture, and thus a large percentage would be obtained in a short than in a long specimen of the same material. With regard to rivets, the last report of the Committee recommend that the steel employed in them should be very mild, and have the lowest limits of tensile strength.

COAST FOG-SIGNALS.

THE latest phase which this subject has assumed, is that of sound rockets, that is to say, rockets by means of which gun-cotton or cotton powder charges are carried up to a considerable height, and then caused to explode. By recent advertisements issued from the Trinity House, mariners are informed that at Flambro' Head, on the north-east coast, and at the Smalls Rock lighthouse, in the St. George's Channel, explosive rockets are now employed to convey sound signals in thick or foggy weather. At Flambro', these rockets have superseded the gun which has hitherto been the means of sound signalling at that station, and are to be fired every ten minutes when there is fog; while at the Smalls, where the introduction of this kind of fog-signal, in addition to the bell now there, is quite a new thing, a rocket is to be discharged every half-hour when the weather is such as to obscure the light shown from the tower.

Seeing that at Flambro' Head the gun is deposed in favour of these new rockets, and also that they are to be adopted as the fog-signal for use at a rock lighthouse station, where hitherto it has only been considered practicable to make use of a large bell, the inference may fairly be drawn that for fog-signal purposes the explosive rocket possesses certain advantages. The subject is of some importance to mariners, and the following remarks are published in the hope of awakening an intelligent interest in the matter among our readers, and especially among our foreign friends.

It has been found by experiment, that whenever any special direction is given to a sound, the greatest strength of that sound travels for some distance along the forward prolongation of the axis of the sound producer; for example, the sound emitted from the mouth of a trumpet is strongest in a beam which would be formed by the forward continuation of the orifice in the line of the trumpet. Along that line only can the greatest power of the sound be appreciated; but, as the sound waves travel onward, the motion diverges on all sides, but with unmistakeably enfeebled power. Consequently to

an observer at, say, half a mile from the trumpet, anywhere out of the axial line, the intensity of the sound is diminished; at right angles to the line the effect would probably be reduced by one-third, and in the semi-circle behind the mouth by fully one-half. The instrument now principally used for fog-signalling on our coasts is the siren, which has been previously described in these pages. The sound produced is concentrated by means of a large cast-iron trumpet, and issues from the mouth, having more or less the character of a powerful beam diffusing its motion on all sides, but retaining its greater energy in itself. It is true that such a beam may be projected with useful effect in any special direction required, but where a large arc or the entire circle has to be covered by the sound signal, one portion of that arc or circle necessarily receives a more effective sound than other parts. The attendants in charge of fog-trumpets in this country are instructed to point the mouth of the instrument as nearly as possible towards the direction from which the wind is blowing, so as to ensure the best effect being exerted against the opposing influence of the wind. This instruction is a recognition of the superior power of the sound in the axis of the trumpet. It may be urged from what has been said above, that after all a whistle which diffuses its sound equally all round would best be suited for a coast sound-signal, but it happens, unfortunately, that through this all round diffusiveness of the whistle, the strength of its sound is to a great extent dissipated in the immediate vicinity of its source, and is thus rendered unable to penetrate to any distance, and consequently it bears no comparison with the condensed sound issuing from the siren and its trumpet.

As regards the discharge of a gun, a similar effect is found to be produced, though not in so marked a degree as in the case of trumpets. The strongest wave of sound is impelled forward along the axial line of the gun, while at right angles to the line of fire and in the rear of the gun there is a sensible loss of power.

It would appear, therefore, that hitherto there existed no simple method of distributing a powerful sound equally over a given area, apart from the influence of other obstructions, such as wind, &c. But in addition to this drawback there is another, and at times

more fatal influence in lessening the effect of sound signals even at short distances. In the Trinity House experiments carried out by Dr. Tyndall, at the South Foreland, in 1873, it was clearly shown that cliffs, &c., intervening between an observer and the source of sound, had a marked influence in lessening the power of the sound even at very short distances. For instance, sounds heard plainly at $3\frac{1}{2}$ miles in full front view of the instruments, were barely audible at 1 mile distance in Dover Bay, where the fog-signal station was hidden from sight by projecting cliffs. Many references have been made to areas of "sound shadow" so formed, and doubtless many of our readers have themselves experienced the loss of power in the sound of a fog-signal when they have been, so to speak, round the corner.

When, therefore, the sound of an instrument already enfeebled by reason of its being out of the beam of maximum intensity, meets with obstructions such as are offered by the faces of steep cliffs, or even a group or forest of trees, it is not surprising that the sound fails to get beyond those obstructions with any serviceable effect.

The explosive rocket has been devised to obviate to some extent the interference above referred to as regards the gun. The noise of the explosion of gun-cotton, or cotton powder, is similar in character to that of the discharge of the gun, but it has been described as giving a sharper and a harder sound. The initial force of explosion is greater than that of gunpowder, and, therefore, the initial sound produced is more intense. The charge is carried up by the rocket to a height of about 600 feet, and there is made to explode in free air, the sound being equally distributed on every side. There is no concentration of the sound in any special direction, but the strength is equal all round. From the height at which the explosion takes place, it sends its direct sound downwards into places which would be completely hidden from the level at which a gun could be fired, and which would never be reached by the sound of its discharge. Flambro' Head, where the rocket system is substituted for the gun, exemplifies the case very well. The gun is placed on the extreme edge of the point, and as the cliffs are about 100 feet high, it is slightly depressed when fired,

so that the sound may strike the sea surface. But it happens that at a very short distance to the south-westward in Bridlington Bay, the gun station is invisible at the sea level on account of the intervening cliffs. With northerly winds, this bay is often crowded with vessels of all sorts and sizes ; and in it there is also a dangerous shoal, known as the Smithic Sand, with as little as 6 feet of water over parts of it at low water spring tides. But it is more than probable that the report of the gun has rarely been heard in that bay, where in thick weather its sound would be so serviceable, at two miles from the signal station, and that most frequently it has not been audible at one mile and a-half ; while abreast of the station, in the axis of the gun, and clear of all, save aerial, obstructions, the report has often been heard at very much greater distances. An actual trial recently made at Flambro' of the gun *versus* the rocket has come under the writer's observation, and entirely bears out what has already been said. One man walked along the edge of the cliff, keeping the gun station in sight, and four observers were on the rocks below, it being low water. It had been arranged that, upon intimation from the observers below, the man above should signal to the gun station to fire first a rocket, then a gun. The observers walked along the beach to the southward (the wind being about S.S.W.), to a distance of about a quarter of a mile from the point, and then signalled for the discharge. The rocket rose so that the explosion was quite visible to the observers, and the report was very loud and sharp : the gun followed with a dull and heavy sound. At half a mile distance, the rocket was very loud, the gun very faint, and not heard by one of the observers. At a mile and a quarter, the rocket was again loud and distinct, while the gun was only heard by two observers, and then only with the most strained attention. The fact of the explosion of the rocket having been visible on each occasion, shows that it got quite clear of all those obstructions which quenched the sound of the gun and hid it from sight.

We think enough has now been said to prove the advantages which the new rocket appears to possess as a sound signal, over the gun fired with a charge of 3 lbs. of powder. But we may add that the labour of loading and cleaning the gun will now be done away with, and will render the duties of a fog-signal gun attendant

much less arduous than heretofore. It is also said that the use of explosive rockets will be less expensive than firing the gun.

The explosive rocket is an important step forward in the science of fog-signalling. It is a step in the direction of simplicity, economy and efficiency, and it is to be hoped that the trial now being made by the Trinity House will be sufficiently successful to justify the extended use of such rockets at stations such as Bishop Rock, Scilly, &c., where their usefulness could not fail to be appreciated by mariners.*

A WINTER IN THE ARCTIC REGIONS FORTY YEARS AGO.



A SIMPLE narrative of the endurance of British seamen is never without interest, and at the present time perhaps more particularly so, when shown amidst ice and darkness. The following extracts are from the log of the ship *Swan*, Captain Robert Dring, which left Hull for Davies Straits, 13th April, 1836; and the neatly-written record, continued unvaryingly through all trials, has so strong a touch of pathos, that without giving the entry for each day its own words are preserved wherever it is possible. The log commences "April 11th, 1836. The owners came on board, and mustered the ship's company." At first all went well, the weather generally fair, and with moderately open water, until—"May 10th, 1836. Nunarsoi Island on the S.W. coast of Greenland, bore E.; distant 50 miles; frequent strong gales, with thick snowy weather." "May 16th. Lat. 65° 30' N. Amongst streams of close ice." "May 20th. Light wind and fine clear weather; at 6 a.m. the ice began to close; made fast to a berg in 12 fathoms water, the ice going to the South at the rate of two knots per hour; at 11

* One word of caution to mariners is necessary. These rockets are not to be regarded as signals of distress, should they happen to be seen notwithstanding the existence of thick weather. There is no special light about them, and they are entirely distinct from the rockets used at lightships and rock lighthouses for calling assistance from the shore.

a.m. cast off from the berg, and the ice opened." "May 25th. Eight a.m. Dodging along the West Pack edge; 4 p.m., saw a fish; called all hands; sent six boats away, but they returned without success." "June 4th. Saw a fish, sent boats away, but they returned without success." "June 9th. Ten p.m. Came to a bar of ice at the North end of Hare Island; made fast to a berg."

Here they remain immovable with calm weather till June 24th, when the ice opens for a day or two with light airs, but on the 26th, they again make fast to a berg, and remain so almost continuously until July 16th, when they have fine weather and light airs along the land of Disco, and through the remainder of the month they met with much ice, the men frequently towing the ship, which often receives heavy blows, "damage unknown." They meet the *William Lee*, with one fish; and at last, on the 9th August, the entry is "Saw a fish; sent away two boats; the boats returned without success." This ill-success is repeated several times, until August 13th, when "Henry Judge struck a fish and killed her, and at 4 p.m. Robert Wilson struck a fish, and at 5 got her killed; then got her alongside and began to flinch; length of bone 8 feet 6 inches and 11 feet."

From these two whales they make 68 butts of neat blubber, and soon after take on board six men from the wreck of the *Margaret*, of London; then, throughout September, there is constant record of warping through ice into lanes of water, getting severe blows from the ice in heavy seas, the ice always increasing and the water decreasing, till on October 1st, in "dark, heavy weather, the ship is tight beset," and in spite of every effort in breaking away the bay ice, and warping the ship through to every available patch of water, this is the entry for October 12th:—"Very poor prospect of getting out of the ice this winter, everything therefore that humanity can suggest is being done for the comfort and convenience of the men. Began to cover the decks fore and aft with sails, so as to enable sufficient exercise to be taken without danger of being frost-bitten. Thermometer 11°." This in a few days falls to 9° below zero, with dark, gloomy weather. On the 19th of October the weekly allowance of bread is diminished by half a pound, thus reducing it to 4 lbs. weekly; and another

entry is, "Cut our foretop-gallant mast up for fuel; weather getting colder every day;" then Sunday, 23rd, 11 a.m., "All hands assembled between-decks for Divine worship."

A week of great anxiety follows; a topmast is cut up for fuel, the coals are nearly expended, and the ship drifts with the ice amongst great numbers of bergs, fifty in sight at one time, till "Sunday, 30th, 11 a.m. Divine service was performed between-decks; all hands paid great attention to the speaking. Dark, dense weather; the upper limb of the sun just perceptible above the horizon at noon. A glass of water placed on the cabin table is covered with ice in the course of a few minutes; the ink freezes in the table drawer."

November brings little change. On the Sundays, "Divine service performed between-decks this day as usual, and an excellent and appropriate sermon delivered by the same pious man. Extremely cold, the thermometer being of no use for ascertaining the exact degree, for the quicksilver has sunk in the bowl." Their only change is an occasional bear or fox; from the latter they make "a *very* good soup," which is most acceptable, as the weekly allowance of bread is now diminished to $8\frac{1}{2}$ lbs.; but still they can say, "Our situation in this dreary region is very dismal; we all anxiously look forward to that period when we shall once more see the sun; but thanks to the Almighty, that all of us are blessed with a good state of health."

The early part of December is quiet, but on "Thursday, December 22nd, strong gales the whole of this day. At 3 p.m. the gale increased, and, owing to the snowdrift, it was impossible to see many yards. At 4 p.m. the floe began to crack, and at 5 the swell broke our dock in several places. Got a warp out and made the ship fast to the largest pieces, the wind at the time blowing a hurricane. At 8 p.m., more moderate. Thermometer rose to 25° above zero; our bed-cabins, which five hours ago were encrusted with ice an inch thick, are now in a miserable state, bedding being in the midst of the wet."

"December 24th. Strong gales. 1 a.m. the watch on deck saw a berg to leeward, the ship drifting down on it very fast. Called all hands immediately, and got a couple of bread-casks on

deck, when each man awaited his fate. When about 200 yards from us the gale shifted to the N.W., and, consequently, we were to leeward."

This sort of thing continues; they get the bread-casks on deck, fearing collision with bergs, the mercury in the thermometer often out of sight, and the only variety is the careful entry of what casks and capstan bars they cut up for fuel, and of Divine service, performed by "our pious shipmate; the attention of the men and behaviour deeply shows the interest they take in the solemn occasion."

"Wednesday, January 11th. Strong westerly breezes with hazy weather. The ship drifting inshore in the direction of a reef of bergs. Called all hands, and got the bread started into the bags, and the remainder of our provisions and clothing on deck. At 2 p.m. the floe caught one of the bergs, and our dock gave way; the pressure of the ice throwing our ship on her broadside. Passed everything on the floe, the ice turning up the ship; some of the men in jumping from the ship on the ice bruised themselves very much. At 4 p.m. the floe gave way a-stern, when the ship righted, and once more we beheld the goodness of the Almighty. Covered with snow and benumbed with cold we ventured on board, having been three hours on the ice, expecting every moment to see our home laid in ruins, and ourselves exposed to the fury of the storm. Two pounds of bread were served out per man (extra), some of them being without a biscuit. 10 p.m. The wind abated, with very dark, thick, snowy weather."

"Monday, January 23rd. The sun showed herself just above the horizon, being an interval of seventy-four days since we last saw her. The mercury being frozen in the thermometer, and it being quite useless on deck, on placing it twelve inches from the cabin stove the quicksilver rose to 26° above zero, being 6° below the freezing point. After walking under the awning for a few minutes we were covered white with frost."

But now their worst misfortune begins to cast its shadow upon them, and the following extracts are taken from the patient daily record of the weather:—

"Monday, February 18th. Another dreary week has passed.

No alteration has taken place that will tend to liberate us from our icy prison ; the ship for the last month has drifted but a few miles south, while the severity of the weather is daily and hourly increasing the strength and surface of the ice. Although the meridian altitude of the sun is upwards of 5° , she has no sensible effect on the thermometer when exposed to her rays. The combined causes of such intense cold, and the want of nutriment, have a great effect on our men, one-half of whom show symptoms of scurvy, while others, through neglect, have suffered themselves to be severely frost-bitten. Cut up the pump-well and the coal-hole bulk-head for fuel."

"Sunday, February 21st. Strong winds, with the same intense cold. At noon the mercury in the thermometer rose to 25° below zero, a change that is felt by each of us. Drifting south very fast ; having shut in Waigat Straits with Four Island Point land in the last three days. Divine service performed in the 'tween-decks morning and evening, as usual. The labours of our pious shipmate are duly appreciated by the more thoughtful part of the crew."

"Thursday, March 9th. Fine, clear weather. The island of Disco lying a-beam of us about thirty miles distant. Our prospect of relief from this desolate place better than we expected a month ago. The week's allowance of bread thus was increased to 4 lbs., being an additional half-pound."

"Monday, March 13th. Strong winds ; the ship drifting along the island of Disco. No water to be seen in any direction, only a solid sheet of ice as far as the eye can reach. Thermometer 20° below zero."

"Monday, March 20th. Strong gales from S.E., the ship driving fast in a N.E. direction. Four p.m. passed a berg a-ground, against which the ice was tearing up with such force that it resembled a sea breaking over a cliff. Thick, snowy weather. Thermometer 25° above zero."

"Friday, March 24th. During the late gales the ship has drifted 45 miles to the northward, and we are once more among an immense number of bergs, from which there is no chance of being liberated until the next northerly gale."

"Monday, March 27th. Fine weather, light northerly wind.

There is very little chance of our being able to stop on board until the ice breaks up, our bread being nearly expended, and several of the men down in the scurvy; though the land is no great distance, the chance of getting the ship out is very small, being frozen in the very centre of a large floe, and it would be impossible to attempt to saw through the ice, the health of our men being so much injured by being exposed to the cold, and by want of sufficient quantity of nutriment."

"Friday, March 31st. S.E. light winds with fine clear weather; the ship has drifted a few miles north since yesterday. Lat. by observation 70° 30' N. One whole cask of bread is all we have left, twenty-seven hands having received their allowance for the week out of the other. In four weeks' time it will be impossible to stay by the ship, and abandon her we must, for a reduction would be attended with a serious result. Four of our men are lying in the last stage of scurvy, and the majority of the remainder are suffering from the same disease. At noon, some of our own men and the *Margaret's* men volunteered to leave the ship for Hare Island, which was a-breast of us, about fifteen or twenty miles off; the *Margaret's* men are David Stoddard, William Harper, William Bainson, Alexander Anderson, and James Jameson; and our own men are Daniel Knight (cook), Thomas Halley (seaman), William Walker (cooper's mate), Robert Darby, Robert Collier, and John Nuttall (seamen). At 3 p.m. the ship began to drive southward, the wind got round from E., when orders were sent that the men were not to leave the ship. At 4 p.m. they all mustered, and begged leave of the captain to permit them to go, even being willing to take less provision with them. Average of the thermometer 26°.

"Saturday, April 1st. Light winds and fine weather. 5 a.m. The above-mentioned men left the ship with 7 lbs. of bread each, two pieces of beef, one piece of pork, a cheese, and other necessaries. Two watches assisted them in launching the boat, and returned to the ship. 7 p.m. They were just perceptible from the masthead, and appeared to be making great progress."

"Wednesday, April 5th. Light winds and clear weather. Thermometer 28° above zero. One pound of flour was weighed

out to each man yesterday, an increase of 11 oz. on the usual weekly allowance. Some of them still lie in a deplorable state of scurvy. Our little stock of anti-scorbutics is expended, and what the result will be God only knows. Our time is getting very short, and a few more weeks must decide all. To Him therefore who has preserved us thus far, we still trust, and pray for a continuance of Divine protection.

"Thursday, April 6th. Light winds and clear weather. 4 p.m. While walking the quarter-deck observed two men about four miles to the E. of the ship, standing on a hummock of ice, and waving a flag, another being seen from the masthead a few miles a-stern of them. Called all hands, and launched a boat to get over a lane of water; then what was our astonishment and surprise to find that we beheld the only surviving part of our unfortunate boat's crew, Mr. Stoddard and Daniel Knight. A party proceeded further, and fell in with Robert Darby, prostrate on the ice, and before he could be conveyed to the boat the vital spark had fled. Such was the severity of the weather, that out of sixteen hands that launched the boat to their assistance only two escaped being frost-bitten. Thermometer 28° below zero, with a breeze of wind and thick weather."

"Monday, April 10th. The ship is drifting fast to the west. This evening we were greatly enlivened by seeing several birds—mollymauks."

"Wednesday, April 12th. Strong breezes; ship drifting south amidst a thicket of bergs, round one of which she made a complete circle; providentially we escaped uninjured. One of Daniel Knight's feet cut off this morning by the surgeon, mortification having taken place, and very slight hope is entertained for the safety of the other.

"Thursday, April 13th. The ship driving north compels us to diminish our weekly allowance of bread $\frac{1}{2}$ lb., yet so blind and thoughtless were some of the men, that this prudent measure was regarded by the greatest part of them with dissatisfaction. Daniel Knight is doing well, but there appears not the slightest chance of saving the other foot."

"Tuesday, April 18th. A few minutes before midnight

Laurence Duncan, a Shetlandman, died, having lingered a long time in a complete state of debility.

"Wednesday, April 19th. Light winds and fine weather 8 a.m. The surgeon amputated the remaining foot of Daniel Knight, there not being the least chance of saving the least part. James Jameson died this morning of the scurvy.

"Thursday, April 20th. Noon. Called all hands, and launched the bodies of James Jameson and Laurence Duncan through the ice.

"Friday, April 21st. Light winds and fine weather. Ship drifting very slowly south. Richard Brady, seaman, died in a dreadful state of scurvy."

"Thursday, April 27th. Nearly calm the whole day, with hazy weather. At noon, John Stocks, seaman, died of scurvy, thus reducing our number to 38. Unless a speedy deliverance comes, a number more must surely die, so deeply are they infected with this horrible disease. Eight months we have been frozen in this solid floe, and our prospect of getting out is small; it appears as far distant as ever. Numerous opportunities have offered when we could have sailed in any direction, had we been out of this piece. Had the whole of our ship's company been alive, they might have sawn a passage through the floe, but the enfeebled state of the few that can walk renders the attempt impossible."

"Sunday, April 30th. Light winds and fine weather. Thermometer 18°. 2 p.m. Daniel Knight and Henry Judge died; the former in a state of debility from the loss of both feet, the latter in the last stage of scurvy after being bedridden three months. Our number is reduced now to thirty-six, and there are not more than eight or nine hands on board but what are affected with the same disease."

"Tuesday, May 2nd. Light southerly winds and clear weather. 11 a.m. Thomas Huston (late of the *Margaret*, of London) fell a victim to the scurvy; our number being reduced to thirty-five hands in all."

"Saturday, May 6th. Light winds and fine weather. At noon, the few of our men that were able, commenced sawing a passage through the floe, but made very poor progress; our strength not

allowing us to work more than three hours, during which time only 40 feet of ice was sawn ; when overcome with fatigue, we returned on board. Thermometer 25° above zero."

"Monday, May 8th. We again tried our uttermost to get the ship out, but the united progress of these two days' exertion could have been accomplished by an usual ship's company in one hour.

"Tuesday, May 9th. Light winds with thick weather. Being unable to proceed any further with the saw, gave up all hopes of the ship. At noon, Peter Hunter, Shetlandman, died of scurvy ; our number being reduced to thirty-four hands on board. Twenty of our men have died, and only three are now able to keep the deck, the remainder being bed-ridden ; some of them are nearly dead, and others not able to move a leg. Our only bread cask is getting low.

"Wednesday, May 10th. At noon, launched the body of Peter Hunter through the ice, the mate assisting, there not being so many of the poor men left as were able to fulfil the sad office."

"Friday, May 12th. Light winds and thick weather. The ice being slack all round our floe, many opportunities have offered within the last week, when we could have reached the land in the whale-boat ; but the state of our poor men prevents our resorting to the last extremity. But the 25th of this month will be the longest time we can stay by them, our provision being nearly expended."

"Sunday, May 14th. Light northerly breezes and fine clear weather. A great number of whales to be seen in every direction. At noon saw a ship bearing W.S.W., distant fifteen miles. 8 p.m. Saw another sail to the southward of her, being the ship we have seen this eight months. The ice being open, we are all anxiously looking out for a boat, the ships having answered our signals. The ice closing fast ; the above ships in sight with their ensigns flying at their mastheads. Divine service among our few men.

"Monday, May 15th. Strong south-easterly breezes. 3 a.m. Saw a boat making great progress towards us. 5 a.m. They reached the ship, and we found ourselves indebted to the humane Master of the *Princess Charlotte*, of Dundee, for our happy

deliverance. The *William and Ann* and *Princess Charlotte* still in sight at the edge of the ice.

"Tuesday, May 16th. Strong south-westerly winds. The boat's crew belonging to the *Princess Charlotte* left on board, being prevented from returning by the closing of the ice.

"Wednesday, May 17th. The boat and crew left our ship, and falling in with some good leads were soon out of sight. Noon. James Moore, Shetlandman, died of scurvy, having lived just long enough to see relief come to us."

"Friday, May 19th. Noon. Launched the body of James Moore through the ice. 6 a.m. Heard the report of a gun, which we immediately answered, and continued firing until 7 p.m., when five boats with men and provisions arrived at the edge of our floe, and got provisions on board from the following—*Princess Charlotte*, *William and Ann*, *Horne*, *Heroine*, and *Dorothy*.

"Saturday, May 20th. Light winds and fine clear weather; the above boats' crews busily employed in sawing a passage through the ice.

"Sunday, May 21st. Light winds and hazy weather. The above boats' crews mustered; at work sawing through the bay ice. In the afternoon got the last piece out, and in three hours we were amongst the ships—the *Princess Charlotte's* men still on board, our crew being disabled. The *Princess Charlotte* conducted us into Whale-Fish Island Harbour, not one of our men, with the exception of the cabin people, being able to be on deck.

"Monday, May 22nd. The men of the *Princess Charlotte* towing us into the harbour. 3 p.m. The *Bon Accord*, of Aberdeen, Captain Parker, sent all his boats to our assistance. 6 p.m. Came to anchor in fifteen fathoms water; *Bon Accord* and *Princess Charlotte* in company.

Tuesday, May 23rd. Light winds and fine clear weather; the *Princess Charlotte's* men on board pumping the ship, and stowing the hold, our crew being quite disabled.

"Wednesday, May 24th. John Johnson, Shetlandman, died of scurvy. Ship lying in the harbour."

"Friday, May 26th. Light winds and hazy weather. Buried the body of John Johnson on the Island.

"Saturday, May 27th. Strong gales from the S.W. 4 a.m. Expected to drive on shore ; not a soul on deck but the mate and master, Surgeon James, and Samuel Dring. 5 a.m. It moderated and cleared up, when *Traveller*, of Peterhead, and *Duncombe*, of Hull, hove in sight. At noon their boats came on board with provisions and clothes, which were much needed by our poor crew ; some of them are in a deplorable state, while those in whom the disease had not made so great progress, are now greatly recovering. We have experienced the utmost attention from the Esquimaux and Danes ; the 'Cooners' washing our clothes, and furnishing us with scurvy grass, which seems to be very abundant on those Islands."

"Monday, May 29th. North-north-westerly light winds and fine weather. 9 a.m. Five boats came off from the *Duncombe* and got our ship under way, only four of our men being able to assist. Pumped ship, and found that she made water, the oakum hanging out of her seams very much. The cask-heads of our second tier are burst with the severity of the weather. Having laid a week in this harbour in such a distressing situation, the *Duncombe*, of Hull, has abandoned his fishing, and is accompanying us home, having got us under way and put twenty of his hands on board of us to work the ship, our own men being totally unfit, having suffered so dreadfully from the scurvy. This evening Thomas Tomleson, Shetlandman, died, victim to this horrid pestilence."

After a few days of quiet sailing, and losing two more ship-mates from scurvy, the regular sea-log re-commences, and without much to record, except constant pumping, the voyage ends with this peaceful entry : "Monday, July 3rd. Calm. The pilot came on board. Called all hands and towed the ship up the Humber. Came to an anchor in nine fathoms water. Spurn lights bearing W.N.W., distant three miles."

[Our readers are indebted to Captain Henry Toynbee, of the Meteorological Office, for the above interesting and graphic narrative.]

CUSTOM HOUSES.—VIII.



ANOTHER branch of the work of Customs' officers has, from time immemorial, been the administration of the Quarantine Laws. Jickling, who has been often referred to in these pages, places it first in his five grand divisions of Customs' officers' duties. He says in his enumeration of the objects of Customs' Laws :—

“ 1. The preservation of the public health by preventing the introduction of infectious disorders. This has been effectually accomplished during a long period of time by the salutary regulations of quarantine.”

In addition to the value which is placed upon this phase of official duty, it may be found of great interest to the shipping community to give a short detail of those laws and regulations, especially as they are not generally understood.

The name appears to be derived from the Italian, *quarantina*, meaning a detention of forty days. This was the original time fixed for a vessel's supervision. Blackstone says forty days was the time fixed for a widow, who was entitled to dower, to remain in her husband's mansion after his decease, and was called, in English law, the widow's quarantine. That time of detention for vessels liable to quarantine has long been abrogated, and is now various, being regulated by the authorities according to the circumstances of each case. It was first observed at Venice in the year A.D. 1127, and a hospital was established there, upon an island, in 1403, called the Lazaretto from the name of the island—St. Lazarus. Other nations have adopted the plan from time to time under varied regulations, but most of them have aimed at stopping the importation of the plague—so fearfully prevalent in the Levant at one time—yellow fever, and cholera, in later times.

The infection of small pox does not seem to have been prominently dealt with by any of the quarantine laws—properly so called—as vaccination was probably deemed a counter agent to it. By more recent Acts, however, the disease seems to

have been legislated for, at least in England. No doubt the laws which, in different countries, have been promulgated on this subject, from time to time, have done a certain amount of good in staying the spread of disease, but at the same time it must be admitted that they have been generally very oppressive. They have been a most effective barrier against the development of the carrying trade, not only in foreign nations, but even in our own enlightened land, in former days. At the present time their rules are carried to an absurd extreme in some countries, notably Spain. The proper question at issue in imposing them ought to be—What is the minimum amount of restriction necessary to stay the spread of infection? In many cases the maximum has been the rule. In the time of Jickling the English law then in force was that of the 45 Geo. III., c. 10 (12th March, 1805), and which was worked under Order in Council of 5th April, 1805. It quoted the previous "consolidating law" of quarantine, 39 & 40 Geo. III., c. 80, which gave power to erect a "Lazaret" on Chetney Hill, in Kent; and, as the funds for erecting the same had run short, it gave further powers in order to complete the building. It also gave power to provide a floating "Lazaret." To meet the expense of the same certain duties were imposed on ships, namely, 8s. to 15s. per ton burthen according to scale, and they were to be recovered as Customs' dues. There were many other regulations of a restrictive character imposed, such as signals to be made at sea, reports to pilots, forms of questions to be put by Customs' officers on boarding, and so forth. In the Schedule to the Act a list was printed of places from which *all* vessels arriving must perform quarantine; and also a discriminating list of goods, forming cargoes, which were placed in three classes, according to the degree to which they were liable, or supposed to be liable, to infection. There was also a list of the stations at which quarantine was to be performed.

Though friend Jickling looked upon this Act with such complacency, the shipping community did not, and many were the muttered curses devoted to it. After many efforts the law was greatly modified, and put upon its present basis. To this result Mr. Arnaud, formerly Collector of Customs at Liverpool and other

ports, contributed not a little, and his "constituents"—the Liverpool merchants especially—were not slow to appreciate his efforts. He had also the thanks and more substantial marks of favour given him by the Government authorities.

The Act which is now the main body of our modern English quarantine law is that of 6th Geo. IV., c. 78. There are thirty-seven sections imposing a number of salutary regulations. These, however, have been since somewhat modified as will be shown presently, by one or two subsequent Acts. In it the then existing laws upon quarantine were consolidated. The second section provides that all vessels, including ships of war, coming from or having touched at any place from whence it may be adjudged by Her Majesty in Privy Council, the plague or other highly dangerous infectious disease may be brought, and all boats, &c., receiving persons or articles from such vessels, are to be considered liable to quarantine. Her Majesty in Privy Council having reason for believing yellow fever or other highly infectious distemper to prevail in America or West Indies, may order any vessels arriving therefrom to come to anchor at certain places to be named by the Commissioners of Customs, in order to ascertain the health of the crew before entering port, but such vessels not to be deemed liable to quarantine unless specially so ordered. Similar powers are given to the Lord Lieutenant of Ireland in Council. It will be seen that a great advance is here gained on the old law inasmuch as the regulations are more elastic, and no hard and fast line is drawn as to the necessity of vessels taking up quarantine at once upon arrival from certain quarters. But, according to a placard issued by the Customs' Secretary, and dated 1st January, 1840, it is ordered that where Orders in Council declared vessels arriving from certain ports liable to quarantine, they are only to enter certain ports or places, namely:—Cromarty Bay, River Tay, Firth of Forth, Holy Loch in the Clyde, White-Booth Roads in the Humber, Standgate Creek, Mother-Bank at Portsmouth, Plymouth, Falmouth, Milford, Liverpool, Belfast, and entrance to Cork Harbour. The duty is imposed upon all shipmasters to take notice of the regulations as published in the *London Gazette*; and, it is threatened, that no ignorance thereof will be admitted as a

plea, but that penalties will be strictly enforced. In that notice the duties of shipmasters, pilots, and "other persons" on board of such ships, are detailed; the various signal flags are described, and it is stated in the last paragraph that any person giving information of any breach of the law will be entitled to the "usual reward." By the 29 & 30 Vic., c. 90, all penalties, imposed by the Act of Geo. IV., may be mitigated at discretion by the Justices or Court having jurisdiction; and it is further stipulated that every vessel having on board any person affected with a dangerous or infectious disease is to be deemed within the provisions of the Quarantine Act, although she may not have commenced her voyage, or has come from, or is bound to, any port in the United Kingdom.

By the Act 35 & 36 Vict., c. 19, a penalty of £50 is attached to a breach of the rules under above Act. The old "preliminary questions," dated 19th July, 1825, are still used by Customs' officers on visiting vessels infected by contagious diseases. They are numbered one to twenty-five, and must be answered in writing upon oath, made by the commander, or other person having charge of the ship. Owing, however, to the prevalence of cholera on the Continent in 1873 the Board of Customs ordered that, in addition to such printed questions, the master of every vessel from foreign should be *verbally* interrogated as to the health of all persons on board; and that the London practice in such cases should be observed at all the ports of the United Kingdom. This practice consists of certain signals and questions being used. If satisfactory, vessels are to be allowed "free pratique," and then the "quarantine certificate" is to be given. If it is a doubtful case, the ship is to be detained till inspected by the medical officer of the port.

A further modification of the quarantine law was embodied in the Customs' Consolidation Act of 1876. Mr. Hamel, in his preface to Butterworth's edition, says:—"By an entirely new provision, greater facilities are afforded for dealing with the antiquated laws relating to quarantine (6 Geo. IV., c. 78) under which offenders were subjected to severe penalties, ranging from one to five hundred pounds, for the recovery of which masters of ships and

others were exposed to dilatory and expensive proceedings in the superior courts. The cheaper mode of disposing of these cases by summary prosecution before justices is provided for, and the penalties, limited to £100, are further reducible at their discretion." By Section 234 of the same Act, Her Majesty, or any two Lords of the Privy Council, may prohibit persons landing in the United Kingdom, the Channel Islands, and the Isle of Man, "if yellow fever or other highly infectious distemper prevails" at places touched at by the importing ship, till the officers of Customs ascertain the state of health of such persons, or may order the vessel to perform quarantine, at such times and places as the Commissioners of Customs have appointed. It is also provided that any person quitting such a vessel, previous to permission being officially given, shall be liable to a penalty of £100. Moreover, any master, pilot, or officer in charge of the ship, who fails to hoist the proper signal may be mulcted in the same amount of money.

The purview of the British quarantine law proper has now been brought down to the present time. By the above sketch it will be seen that great modification has been made, from time to time, no doubt partly by reason of the decreased virulence of epidemics, but also in order to meet the increased exigencies of trade, without endangering unnecessarily the public health. The "hard and fast" lines of the old law, existing at the beginning of this century, have been relaxed; and an elastic power has been given to the executive authorities to meet the emergency as it may arise. That it has not been abused, but exercised with a wise discretion will probably be the verdict of the commercial community.

But in addition to the quarantine law proper, a quasi-quarantine system has grown up in recent times. That is, the power given to local bodies to inspect ships, and disinfect them, when deemed necessary by the Medical Officers of Health, established at some ports. It might also be said that the contagious diseases incident to cattle, and the rules regarding them, bear this character. But of these some remarks have been made in a former article. Sundry modifications have taken place in the prime authorities who issue orders under these enactments; and it may be as well shortly to

enumerate them. For instance, the powers conferred on the Privy Council to make rules for the prevention of disease, under, among others, the Diseases Prevention Act, 1855, and the Sanitary Act, 1866; were, so far as relates to England and Wales, transferred to the Local Government Board by the Local Government Board Act of 1871, and the Public Health Act of 1872. For Scotland, orders are still issued by the Privy Council under the Quarantine Act, 1825, and the Public Health (Scotland) Act, 1867. For Ireland, powers are conferred on the Local Government Board under the Quarantine Act, and the Public Health Act, 1874. To explain these changes it is only necessary to state that the Royal Commission of 1871 (which was presided over by Sir C. B. Adderley) on sanitary matters, strongly recommended a consolidation of the laws relating thereto, and the establishment of local authorities—to be kept in action by an inspecting central department. Hence arose the present Local Government Board as proposed by Mr. Goschen, in his Bill of that year. Amongst many other things dealt with, that of dealing with infectious diseases on board, and the disinfection of ships, are regulated. To show the necessity of the Act, a case in point, which occurred in March of the same year, may be mentioned. A steamship left the East India Docks, having on board a seaman suffering from small-pox, and who had slept on board the previous night. He was landed at Blackwall. On hearing of it, the Inspector of Nuisances had him removed to a hospital, and telegraphed to the Customs' officers at Gravesend to stop the ship. The vessel happened to be moored at Greenhithe for the purpose of having her compasses adjusted. The master was served with notice that proceedings would be taken, under the Act of 1866, if the vessel were not disinfected. This was immediately assented to, and completed, to the great satisfaction of all on board, as she was bound upon a long voyage. Whether there was power to detain the ship under such circumstances is extremely doubtful, for the Local Government Board have since decided that no such power is delegated to the "Port Sanitary Authority" except in the case of cholera. They also seem to be of opinion that the powers given in regard to ships, by the Sanitary Act of 1866, are sufficient for the purpose, and that

it is not needful for any power to be given for detaining ships by their officers, in any other case than that of cholera. They, however, point out that the assistance of the officers of Customs in giving information, and in enabling medical inquiries to be instituted, is of the utmost importance to the officers of the Port Sanitary Authorities.

It will thus be plainly seen how valuable a part the Customs' officers have to play in all the operations of the laws and regulations governing the quarantine system of our native country; and to what an extent the Public are indebted to them, if they exercise their office with care and zeal, in preserving the home population from the attack of epidemic or contagious disease. It will also be observed from this cursory sketch that the machinery of our quarantine system has a sort of three-fold motive power: that of the Privy Council, for the quarantine law; that of the Local Government Board, for the sanitary law; and that of the Commissioners of Customs, for both. To those who believe thoroughly in centralisation for all executive authority, this division of power may seem impolitic; and it is a question for the House of Commons to consider, whether another step could not be taken in the line of simplicity and force, by concentrating all these motive powers in one. On reference to the Civil Service estimates for 1877-8, it will be found, at page 86, that the cost of quarantine establishments (Privy Council vote) at Portsmouth and Southampton amounts to £2,869; and at other ports, £600. That, under the same vote, the veterinary department cost £16,891. At page 107—Local Government Board vote—the medical department is set down at £88,640. This amount does not represent all that is paid, for the salaries of the Port Sanitary officers, such as the Medical Officer of Health and his assistants, are paid out of local funds. The amount of money incurred in the extra supervision imposed on Customs' officers, it is almost impossible to assess. Of course it is a question whether anything might be saved by concentration, and it is just possible that the work could not be done more effectually than at present; but it is always a danger in the public service where there is divided authority and separate staffs of officials,

that considerable delays may be incurred in consultations, in correspondence, in misunderstandings, and, what is unhappily too often the case, from feelings of petty jealousy between the officers of one department and those of another.

OUR COMMERCIAL RELATIONS.—ITALY.



N the first day of the present year there appeared a notification in the *London Gazette* to the effect that, whereas the treaty of commerce and navigation between Great Britain and Italy, of August 6, 1863, would cease to be in force on December 31, 1877, in consequence of a denunciation made by the Italian Government, and the two Governments having recognised the utility of prolonging its duration, the undersigned duly authorised to this effect have agreed to declare that the said treaty shall "continue to remain in force until March 31, 1878."—Signed, A. B. Paget and Melegari; Rome, 1877. The treaty to which this notification referred is the celebrated instrument which, after the close of the war of 1859, and the subsequent unification of Italy, settled for a time our commercial relations with that country, on what seemed to be a fair and equitable basis, and, with the exception of a convention or declaration respecting joint-stock companies, dated November 26, 1867, is the only treaty engagement we have with the kingdom of Italy. The treaty in question, concluded at Turin on the 6th of August, 1863, ratified in London on October 29 of the same year, and bearing the signature of James Hudson and Giovanni Manna, was substituted for certain treaties theretofore in force between the high contracting parties—namely, those concluded on April 5, 1847, and December 30, 1854, between Great Britain and Tuscany; and on April 29, 1845, between Great Britain and the Two Sicilies; and on February 27, 1851, and 9th August, 1854, between Great Britain and Sardinia. It was a treaty of reciprocity, and was framed on fair and liberal principles. It provides for

equality of treatment both as regards shipping and commerce ; for mutual protection of the subjects of the contracting parties in everything, even to wreck and wrecked property, and was assuredly a great improvement upon the pre-existing state of things as regarded our relations with the Italian Peninsula. In the dislocated condition in which that country had for years existed—under the Austrian rule—the Satrapies of Tuscany, Florence, and Parma, the unprogressive kingdom of the Two Sicilies, and the equally unprogressive system of the Roman legations, it was not likely that our commercial relations could be of a settled or satisfactory character. The public revenue was for the most part the private estate of the reigning potentate of each division of the fair land which extends from the southern slopes of the Alps to the Island of Sicily, and the various tariffs reflected for the most part the caprices or necessities of those who were mainly interested in their operation. In such a state of things it was, of course, difficult—occasionally impossible—to maintain commercial relations on any settled basis, and accordingly the history of our trade with the States of Italy for many years previous to the settlement of the Italian kingdom was marked by necessity and doubt, and the absence of that development which is the offspring of confidence and fair dealing. For example, one of the most important articles of import from Italy is sulphur. Very shortly before the absorption of the Two Sicilies into the kingdom of Italy, the then ruler of the Sicilies, of his mere motion, thought proper to place an additional export duty on sulphur. The effect was to divert the trade in brimstone to other countries, where the article was obtained on better terms ; and so for the time the matter ended, although, as in all such cases, a great deal of loss was incurred between shipowners and charterers, of which the general public knew nothing. All the caprice and uncertainty to which the trade with the various divisions of Italy was subjected were set at rest and terminated by the treaty above mentioned of August, 1868. That is a treaty which, although containing the inherent defects of all treaties of reciprocity, is not unworthy of the States who are parties to it, and is a remarkable arrangement for a newly-formed kingdom to have accepted. It was no doubt to

the instincts and enlightened counsels of Count Cavour that the conclusion of the treaty of 1863 was mainly due. Under it our trade with Italy has gradually increased, until it has now become a considerable item in our foreign trade. If we take the statistics of the five years ending with 1876 as furnished by the Annual Statement of Trade and Navigation, we find that the trade with Italy was valued in the latter year at nearly fifteen millions sterling, including, of course, the trade in foreign and colonial produce and manufactures. We import from the Italian Peninsula chiefly brimstone, grain, fruit, hemp, oils, skins, wine, and wool; and they take from us our staples, cottons, linen, including manufactures of jute, coals, machinery, and woollens; while such articles as cocoa and spice figure largely in the colonial exports which find their way into Italy from this country. The arrangements under which, for over fourteen years, our trade with United Italy has been conducted, have borne good fruits. Reciprocal treatment in commerce and in navigation, a revised tariff, in which a disposition has been shown to encourage maritime trade, these are great improvements upon the miserable and uncertain state of things which prevailed under the Austrian rule in the North, and the still more miserable and retrogressive system in the South. The Kingdom of Sardinia, beleaguered as it was by difficulties, seemed to have a foreshadowing of the future which awaited her as a maritime State. The elevation to supreme power of the energetic King who, within the last few weeks, has passed away, appeared to be the signal for a new and improved state of things. In his desire to extend the resources of his kingdom, and to enlarge her connexions with other Maritime States, he was ably seconded by counsellors who were equal to the occasion, and whose advice happily not only for Sardinia, but for the entire Italian Kingdom, was taken and adopted. The treaty with this country which has done good service, but which is now in course of expiration, will not, we may be assured, be replaced by any less liberal arrangement, or one less suited to the requirements of the two countries. Italy has traditions of which any maritime country may be justly proud. She holds an honoured place in the annals of maritime adventure and discovery. Her gifted sons were amongst the earliest con-

tributors to nautical science ; and if for some generations she has been outstripped in the race of commercial achievement, it was, perhaps, partly because her commercial communities inclined to the ancient ways, but chiefly because of the divided and distracted condition of her people, and the aggressive influence of her ecclesiastical system. All this has passed away ; a new and glorious state of things has arisen for Italy ; she now feels and knows what as a country she can achieve ; her statesmen are worthy of the part they have been called upon to take in the direction of her affairs. It may be that in the settlement of a new commercial treaty with this country, which may have to be formulated to replace that which will shortly expire, there may be much controversy, but there will be no retrogressive action ; and whatever may be the terms of our forthcoming treaty with Italy, we may rest assured those terms will not impair the commercial relations of the two countries, or impede the advancement of that branch of the world's commerce, in which both are so vitally interested.

OVERLOADING IN PERUVIAN PORTS.



AN interesting account of an alleged case of overloading in a Peruvian guano port will be found in a return presented to the House of Commons in August last, relative to the British ship *Rock Terrace*. It appears that the *Rock Terrace*, a new Brunswick vessel of 1,768 tons, was chartered to load not more than one-third in excess of her registered tonnage, without written permission ; an arrangement that would give her a cargo of 2,357 tons. The mark beyond which the vessel was not to load was affixed by the Peruvian officials at Callao. On the arrival of the *Rock Terrace*, at the guano deposits in the Lobos islands, the master (Kenney), in accordance with what seems to be the usual custom of the place, paid the captain of the port a sum of 600 dollars to be allowed to remove the mark two feet higher on the vessel's side. Cargo to the amount of 2,800 tons was then taken in, and the ship's troubles

commenced. The mate (Martin O'Brien) called the crew together, and induced them to sign a protest against the removal of the load-mark; he also addressed a letter to the Peruvian authorities which left them no alternative but to send the ship to Callao for survey.

The *Rock Terrace* arrived in Callao on the 22nd of August last, and O'Brien at once applied for his discharge on the ground that she was unsafe from overloading. The Vice-Consul went alongside the vessel, and after measuring her freeboard, expressed an opinion that the complaint was without foundation, seeing that the freeboard was still $5\frac{1}{2}$ inches in excess of the amount required by Lloyd's rules. He called the crew aft, and explained to them that the mark which had been removed was not a British Government mark, and that, at all events, a portion of the cargo would be ordered to be taken out by the Peruvian authorities in consequence of the representations that had been made to them by the mate. After this, the crew resumed duty for some days, but upon the instigation of O'Brien, they again refused work. Thereupon, O'Brien was charged before a Naval Court, held on board *H.M.S. Albatross*, on the 5th September, with having "incited the crew to mutiny and insubordination by protesting against the vessel proceeding on her voyage to Valencia, and making an entry in the ship's log book, and procuring the signatures of twenty-two of the crew thereunto, the said protest being under the pretence of the ship being unseaworthy through being overladen, which by competent survey she is proved not to be" The survey here referred to had been made at Callao on the 26th August, at the request of the British Vice-Consul, by two master mariners and the surveyor to Lloyd's agent. The surveyors reported that the vessel was well found and fitted in all respects, that she was only one year old, and that in their opinion she was perfectly seaworthy and able to carry her cargo to its destination. The result of the proceedings before the Naval Court was that the charge against O'Brien was considered to be partly proved, inasmuch as he was guilty of insubordination with extenuating circumstances. The Court therefore ordered him to pay $\frac{1}{3}$ part of the expenses of the survey, one-half the expenses of the Naval Court, and to be discharged

from the ship. The Court further censured the master for having removed the Peruvian load-mark, also for having neglected to refer the mate's protest to the proper authorities, and for having endeavoured to sail the ship to Valencia after leaving Lobos, instead of proceeding to Callao as directed by the Peruvian authorities. On these grounds the master was ordered to pay the other half of the expenses of the Naval Court.

The troubles of the *Rock Terrace* were not yet, however, at an end. On the 11th September a second Naval Court was held to inquire into a charge of refusal to go to sea, brought against five of the crew. The decision was that the accused each received twelve weeks' imprisonment with hard labour, and forfeited the whole of their wages. On the 14th September a third Naval Court was called to inquire into a similar charge brought against eleven more of the hands. Of these seven were condemned to eight weeks' imprisonment and to forfeit their wages; the remainder, on the ground of previous good behaviour, being allowed to return on board, with the forfeiture of only a portion of their wages.

On their return to the United Kingdom, the mate and those of the crew who were imprisoned laid their case before the Board of Trade, with a view to obtaining redress; and, judging from the facts of the case as laid down in the official papers, it would certainly seem that they have some grounds for complaint. Whether the vessel was overladen or not is a point on which opinions would, perhaps, differ. The British Consul and the Court of Survey clearly considered that such was not the case, while O'Brien, in his protest, states that the ship was dead in the water, and failed to answer her helm properly. This he attributed both to overloading and to improper stowage. However, this is a matter into which it is unnecessary here to enter. The main cause of the difficulties which arose, lies in the surreptitious removal of the load-mark by Captain Kenney. Doubtless, this was done in accordance with the custom of the port; but when the crew became aware that a mark, which had been affixed to the vessel by permanent Government officials, presumably for the sole purpose of adding to the security of the lives of those on board, had been improperly removed by the captain, and that the ship

was then loaded up to this new line, they clearly had some reason for believing that they were being unfairly dealt with.

The Vice-Consul's report leaves little room for doubt that the motives which have prompted the Peruvian authorities to take such especial care of the lives of seamen trading to Peruvian ports are nothing more than the hope of black mail. The prospect of obtaining bribes rather than of saving human life seems to be the idea which inspires the officials at Lobos, who decide to what extent vessels may be loaded. The operation of obtaining permission for the removal of the load-mark is locally known as "buying drafts," in fact, expenditure under this head seems to be regarded as an ordinary matter of course in the guano trade.

It is satisfactory to see that a strong remonstrance on the subject has been addressed to the Peruvian Government through the Foreign Office. What the result of this remonstrance will be, time will prove; for our part we must admit that we are not very hopeful. It would seem, however, that the authorities at Lima are, at least, making some show of attempting to remedy the abuse. A letter, dated 16th July, 1877, addressed to the British Consul at Lima by J. C. Julio Rospigliosi, on behalf of the Peruvian Government, concludes as follows:—" I need scarcely state to you that the statements contained in your note have inspired me with a most lively desire to obtain the object which you desire, and which, as you state, is to extirpate similar abuses. For my part, I have contributed to this end by at once communicating the information received to the Ministry of Finance, and when the occasion arises, I will also contribute towards the adoption of severe measures to punish those who may commit such offences." British shipowners, however, must remember that they are now reaping the fruits of recent shipping legislation in this country. The Act of 1876, which empowers the authorities in Great Britain to interfere with foreign vessels in cases of overloading, has rendered them, at the same time, powerless when similar interference is practised on British ships in foreign ports. It is only in cases similar to that of the *Rock Terrace* that even a remonstrance can be made. The Vice-Consul at Callao, in his

report on the matter, states that had not the load-mark been removed from where it was first placed by the Peruvian authorities, the vessel would have been fully 800 tons short of her proper cargo, and it is clear that but for the connivance of the captain of the port at Lobos, in the surreptitious shifting of the mark, the British Government could have raised no protest in the case. And should the Peruvian authorities now be able to enforce honesty, the result will probably be that guano vessels will be compelled to sail with short cargoes, for in no case could our Government be expected to open up a discussion with a Foreign Power, on the somewhat delicate question of the exact difference between proper and improper loading. We have, on more than one occasion, pointed out the risks which must inevitably attend the adoption of the system of interfering with foreign vessels in British ports. These risks are now beginning to manifest themselves in the shape of tangible and unmistakeable evils.

SHIPPING PROSECUTIONS.



O far as we are aware, a *unique* account is presented annually to the Bench at Cardiff. It is a return of the numbers of seamen who engage, desert, neglect to join ships, &c., during the year. The Bench laudably evince an interest in such matters, and it would be well if magistrates at the other shipping ports took the same pains to convince themselves of the facts of the case. For, in glancing over such a return, a Justice of the Peace would see at once the extent of the business, the sum of the offences, the amount of punishment awarded, and the proportion of those who escape. Having thus informed himself, he would be the more able to deal fairly with the cases that come before him, for "knowledge is power;" and any mock sentiment that may be got up by the defendant's, or prosecutor's solicitor, could be better dealt with by a reference to any of the facts bearing upon the point of argument.

We have been favoured with a copy of five "tables" of this account, which we print below. It requires little comment from us to explain them. By numbers 1 and 2, it will be seen that the per centage of loss is under 2; which is also the case with numbers 3 and 4. It seems a pity that so many escape, but the main reason for that is apparent, under the heading, "Owners would not prosecute." Doubtless they have their own reasons for not doing so; but it must be evident, if the law is not put in force, a laxity of discipline *must* of necessity ensue: and then, Who is to blame?

The fifth "table" clearly shows that, not the seamen only, but others who infringe the law are proceeded against. We are glad to see this, because to make a statute efficacious it must be administered with impartiality, and "without favour or affection."

YEAR 1877.

TABLE I.

			Seamen Shipped.	Not joined Ship.	Loss per Cent.
British subjects	...	...	19,852	380	1.96
Foreigners	...	...	4,027	66	1.68
Total	...	...	23,879	446	1.90

TABLE II.—Analysis of those "Not joined."

			Number.	Weeks Imprisoned.
Convicted	...	...	68	367½
Discharged by Bench			23	—
Owners would not prosecute			198	—
Absconded	...	...	157	—
Total	...		446	367½

TABLE III.—Desertions, &c., from Unexpired Agreements.
(Ships *en route*).

Ships	...	...	...	999
Seamen	...	...	...	17,292
Deserted	...	...	...	807
Loss per cent.	...	...	...	1.77

TABLE IV.—Analysis of “Desertions.”

	Number.	Weeks imprisoned.
Convicted	18	90
Discharged by Bench ...	8	—
Owners would not prosecute	155	—
Absconded	181	—
Total	307	90

TABLE V.—Convictions.

OFFENCE.	No. of Cases.	Weeks Im- prisoned.	Fine and Costs.	Act.
Neglecting to proceed from Cardiff and other ports }	69	375½	—	243 Sec. M. S. Act, 1854.
Desertion... ..	18	90	—	”
Causing obstruction	4	6½	71/6 and 19/6	{ Common Law.
False discharge	1	4	—	{ 176 Sec. M. S. Act, 1854.
Broaching cargo	1	12	—	{ 243 ditto
Stealing seamen's clothes ...	1	4	—	{ Common Law.
Inquiry (B. T.)	1	Certificate	e suspen	ded for 3 mnths.
Forging seaman's advance note	1	Committ	ed to Ass	ize.
Other offences	2	5	—	—
Total	98	497½	{ 71/6 19/6	Fine Costs

THE HUMAN RACE AND NEW COAL MEASURES.

AN ODD PAPER.

A Mile of Humanity.

“**H**OW are the dead raised up? And with what body do they come?” The latter of these two questions has been often urged on purely physical grounds. Man has for long been swarming upon the earth, and a popular notion is that, when the sea shall give up its dead, and death and hell shall give up the dead which are in them, and when small and great stand before the Throne of God, tenants of

that clay which last formed their earthly tabernacles, there will scarcely be clay enough to restore all the bodies.

To trim down a wandering idea to its just dimensions, let us run over the calculation for the bulk of the whole stock of human bodies living or dead.

Assuming the age of man upon the earth to be now about 6,000 years; and as the whole family of upright bipeds has, with two exceptions, grown by natural generation from one man, the whole earth has only gradually attained its present state of population. If we, therefore, take, say, 750 millions as the average number of human beings in each generation for the whole time; and, say, 170 generations or entire changes of the race, each about 35 years, to make the 6,000 years, we get 127,500 millions as the grand total of human bodies down to this date.

As so many die in infancy and childhood, and as one-half are females, generally of less weight than males, let us take 74 pounds weight for each body as a fair average of the whole, and we then get 4,212 millions of tons as the gross weight of human bodies down to the present time. When the lungs are not inflated the human body is a little heavier than the same volume of sea water. The above total will have, say, the same bulk as 4,205 millions of tons of sea water, and that is just the weight of a one-mile cube. If the bodies of the whole human race, from the first Adam down to the Adams christened this month, could be packed closely and solidly, but without reduction of volume, into a measurable space, we should obtain as the cubic measure of that space a cube, equal to a cubic mile.

As it has become the rage now to celebrate all sorts of centenaries, the conclusion of the present war may be a favourable time to celebrate the completion of the first cubic mile of humanity.

A Mile of Coal.

During the last year the output of coal in the British Islands amounted to 182,000,000 tons. A popular notion is that a great part of the crust of the earth is becoming used up by mining operations, and that if the soil that has been dug out of our mines were piled up it would make quite a mountain range; let us,

therefore, reduce this to figures also. A cubic mile is equal to 147,198 millions of cubic feet, and, allowing $29\frac{1}{2}$ cubic feet of coal in the solid to weigh a ton, we get just 5,000,000,000 tons of coal in one cubic mile, and this is a greater weight than all that has yet been raised in the British Islands. According to the most reliable statistics, the end of 1878 will about just complete the first cubic mile of coal, exclusive of waste in mining. If our fuel had been stored in mountain-heaps on the surface instead of being buried in the bowels of the earth, a very small mountain range indeed would have been equivalent to all the coal fields available to man in the whole of our earth.

The Circle of the Earth.

The bodies of all the descendants of Adam and the mined coal of our islands are, we have seen, each equal to a one-mile cube in bulk. What is that in proportion to the earth?

Take a terrestrial globe 40 inches in diameter—that is much larger than globes are generally made; such a globe placed on the floor would stand about one foot higher than the table at which, perhaps, the reader of this is now sitting. With a sharp knife cut off from the paper on which these words are printed a strip, the breadth of the strip just equal to the thickness of the paper; then from this strip cut off two pieces, the length of each piece just equal to the breadth; cut one of them from an inked portion of the paper, and the other from the paper uninked—take care of them, if you let them fall it will be almost impossible to pick them up again, they will be almost invisible—they are minute cubes of paper, each of whose sides is, say, ($\frac{1}{200}$ in.) one two-hundredth part of an inch. Place these motes of paper dust on the terrestrial globe which is beside you, and you have in them a proportionate model of the bulk of all the humanity of the world, past and present, and all the coal yet raised in the British Islands.

All Our Coal.

If this little black mote, which I can scarcely perceive without a magnifying glass, represents, to the scale of the 40-inch globe, all the coal yet brought to bank in this country, it seems as if we cannot have

yet made a very big hole in our coal stores. That depends upon what the stock of coal laid in for us originally has been. The available coal is generally estimated as that which lies not deeper than at 4,000 feet from the surface. The temperature of the earth is found to increase rapidly as the depth increases. It is supposed that at such a depth the temperature would be 115° F., and that at 6,000 feet depth the temperature would be 150° F. If any of our readers interested in the supply of fuel for our steamers care to judge from actual experiment whether it will be practicable to carry on mining at these depths if such temperatures are correct, he has but to try coal trimming for a few hours, in a bunker, at those temperatures. The 4,000 feet limit gives about 18 cubic miles of available coal—that is just 18 times what we have already brought to bank. The 6,000 feet limit increases that amount to about 28 cubic miles. The greater of these two quantities is represented to scale, in bulk, on the 40-inch globe by two of the period dots on this page. When the first dot has been brought to bank, it may finish the great English sentence; if it does not, the second one must inevitably be a full stop.*

All the World's Coal.

An evangelical preacher stated in our hearing once, in a sermon upon the text, "It doth not yet appear what we shall be," that he believed the redeemed from this earth would in Heaven be initiated into the mysteries of creation, and be allowed to assist at the "launching of new worlds over the battlements of Heaven into space, and the hanging of them up, like lamps of glory, to shine on for ever and ever." Now, suppose that before this world was "launched," or formed, that a model of it had been made—a

* These measures are given in a form that is convenient for illustration, and we have taken what was at hand—the paper and the dot. The thickness of the paper to make one mile cube correct should be the one-hundred-and-ninety-seventh part of an inch. An unbound number of the *Nautical* measured now gives that thickness exactly, when the leaves are pressed between the finger and thumb only. The leaves of a bound volume are only about two-thirds of this thickness. Our models are, therefore, to be understood to be cut from the unbound paper.

40-inch globe. Suppose, also, that not in external form only, but also in its substance, the parts of the proposed earth had been set forth to scale, what bulk of black modelling matter would have been required to mix up with the clay of the shell to represent all the coal which we have yet any knowledge of existing on the earth? The capital letter which we put at the beginning of the word Coal, if blackened on the space within the curve, and then cut out of this leaf, would represent in bulk to scale all the coal in all the world for a 40-inch model of the earth. Suppose that minute bit of paper blackened through, and then cut up and split into still thinner scales, and then mixed with the clay-wash which is to form the outer surface of the model, that would be in bulk a model of all the coal of all the world.

Our readers may speculate upon the value of such a paper as the preceding. The value depends on the application, and that must be left to each individual. A bit of spun yarn or a shred in the hands of one man is valueless, which in the hands of another may become a useful link or an invaluable record.

DETENTION OF VESSELS AT ANTWERP.—The North of England Steam Shipowners' Association has been doing good work in drawing attention to the regulations now in force as regards the unloading of timber cargoes at Antwerp. It appears that the discharge of timber-laden vessels depends chiefly on how soon they obtain a "quay berth," and various causes operate to keep vessels waiting a considerable time before the Harbour Master awards such berths. In consequence, vessels, especially steamers, are liable to be detained for weeks in the harbour; and as, according to the custom of the port, lay days commence only after a vessel has obtained a quay berth, there is great loss entailed upon shipowners carrying timber to Antwerp. The commercial interests of the port would, one would think, remedy this great inconvenience; and we hope the representations of the North of England Steam Shipowners' Association will be strongly urged upon the authorities at Antwerp by Lord Derby, to whom application has been made, and that they will have due weight.

BOOKS RECEIVED.

La Guerre d'Escadre et la Guerre de Cotes. Par P. Dislere, Ingenieur des Constructions Navales, &c. Paris: Gauthier-Villars, Quai des Augustins 55. 1876.

THIS book is a review of the progress made in the construction of ironclads from 1873 to 1876, and is supplementary to a previous work ("La Marine Cuirassée") by the same author, published in 1873. It may be said that the new designs of these three years exceed in interest those of any period in the history of ironclads, except, perhaps, the time when the appearance of the French *La Gloire* and our own *Warrior* told the world that iron would definitively take the place of wood as the material for war-ships. M. Dislere divides ironclads into four classes, and considers the progress made in each class in the various navies of the world. This classification is based upon the service which the different kinds of ships are capable of performing. The first-class comprises the full-rigged sea-going ironclads, most of which are broadside vessels. Of these our own *Alexandra* is the largest, being, however, only slightly in excess of the French *Devastation*, the latter vessel having armour fifteen inches thick, while that of the *Alexandra* is twelve. Other vessels of this class belonging to the Austrian, German, and Turkish navies are described and compared with each other, and with the full-rigged turret vessels the German *Preussen* and the ill-fated Brazilian *Independencia*. The second class of vessels comprises large ironclads which carry little or no sail, and yet may be described as sea-going, that is, as being capable of encountering sea risks, the length of their voyages being limited by their coal space, as they are entirely dependent upon their engines. These are the vessels of the greatest general interest; in them the peculiarities of the ironclad are exaggerated, and it is only in this class that any further material increase in the thickness of armour is possible. The vessels selected for comparison are the English *Devastation*, *Dreadnought*, and *Inflexible*, the Russian *Peter the Great*, and the Italian *Dandolo*. The *Dreadnought* is merely an enlarged *Devastation*;

the *Peter the Great* is of a similar type, but draws less water in order that she may be suitable for the Baltic. The *Inflexible* is shown to be of an entirely new type, and M. Dislere appears to attach special importance to the better accommodation provided in her for the officers and crew than in the *Dreadnought*, these arrangements being of such a character as to make life endurable even for a long voyage. The side-armour of the *Dreadnought* and *Peter the Great* is in each case fourteen inches thick; in the *Inflexible* there are two thicknesses of twelve inches, and in the *Dandolo* one plate 21·7 inches thick. The *Dandolo* is described as something like the *Inflexible*, but designed with the idea of being principally employed in the Mediterranean. The third class of vessels comprise sea-going masted ironclads of the second rank, and the fourth class is made up of the diverse kinds of coast defence ships which have been added to the several war navies of the world during the last three years. Among these are the famous *Popoffkas*, of which M. Dislere gives a very interesting detailed description, but does not by any means consider them a success. In former designs the Russians had followed the lead of the English or of the Americans, in these vessels they struck out a new type. He says:—"This first essay appears not to be a success, but the want of success is due to the incorrect principle upon which the design is based; and seeing the ability with which they have solved the innumerable difficulties in detail, it would appear that the Russian Navy is likely to take a high place," that is, so far as success is dependent upon the ability of the naval constructors.

An interesting chapter is devoted to the comparison of the progress made in guns and armour, in which some facts are brought prominently forward which appear to us to be conclusive as against thin armour. In the early history of ironclads it was thought that armour of very moderate thickness would be of great use at long ranges. M. Dislere gives much interesting detail about the power of the Woolwich, Krupp, and Armstrong guns, from which it appears that at a distance of 1,000 metres, the velocity of the shot from the 85-ton gun is only decreased eleven to twelve per cent. In the face of this fact we can only conclude

that thin armour will give but an infinitesimal advantage against heavy guns. M. Dislere is of opinion that the limit of size and consequently of armour thickness has been reached in the *Inflexible*, larger vessels would be so unhandy that the advantage they would have through their thicker armour would be more than counter-balanced by their greater liability to being rammed. In this we cannot quite agree with him. There is good reason for believing that an improvement on the *Inflexible* might be designed with greater breadth and depth, and finer ends; in such a vessel there would not necessarily be a great loss of speed, and she could certainly carry much thicker armour; while, on the other hand, increase of beam merely would not make her less manageable.

In other chapters, questions of detail in the construction of ironclads are discussed with much ability, and valuable tables are given of the dimensions, armour, armament, engines, cost, &c. of most of the new ironclads; in fact, much information is collected and arranged which, so far as we are aware, is not contained in any work in our own language.

Thalassa: an Essay on the Depth, Temperature, and Currents of the Ocean. By John James Wild, member of the Civilian Scientific Staff of H.M.S. *Challenger*. London: Marcus Ward & Co. 1877.

THAT the author of this work has endeavoured to treat a scientific subject in an artistic manner is evident throughout, and we are bound to say that Mr. Wild has, with the skilled aid of Messrs. Marcus Ward & Co., produced a book of the highest class as regards externals. Nor is there any reason why a similar meed of praise should not be accorded for the internal matter—the literary workmanship, and the numerous beautifully-executed diagrams and charts.

We are glad to find in Mr. Wild's book some new aspects in which the physical features of the ocean may be viewed. As regards the depth of the ocean, he tells us that, "contrary to the ideas formerly entertained of the enormous depth of the ocean, the soundings of H.M.S. *Challenger*, H.M.S. *Gazelle*, U.S.S. *Tuscarora* and *Gettysburg*, indicate that depths of 5 miles, or over

4,000 fathoms, are but seldom met with, and are as exceptional as heights of the same amount on land The greatest of all depths of which we have reliable evidence was found by the *Challenger* on 23rd March, 1875, in the comparatively narrow channel which separates the Caroline Islands from the Mariana or Ladrone Islands. This sounding is situated in lat. $11^{\circ} 24' N.$, long. $148^{\circ} 16' E.$, and amounts to 4,575 fathoms, or about $5\frac{1}{4}$ miles. Several soundings exceeding 4,000 fathoms were obtained by the *Tuscarora* to the eastward of the islands of Nippon and Yezo, and another close to the most western of the Aleutian Islands. . . . H.M.S. *Challenger*, shortly after her departure from Yokohama, sounded in 3,950 and 3,625 fathoms"

Mr. Wild brings vividly before us the magnitude of the superficial area of the ocean in comparison with its greatest depth, and suggests to us that after all the mass of water on the earth's surface is but a thin skin, a view which will tend somewhat to modify the popular idea of "the great deep." As regards the configuration of the sea-bottom, it appears from the sounding operations in mid-ocean, that the alteration of level between two points, as much as a hundred miles apart, is generally so slight "that to an observer standing at the bottom of the sea, the latter would appear a perfect plain." This, of course, applies only to mid-ocean; in the vicinity of land the surface of the sea bottom is likely to be more or less a continuation of the leading features of the adjoining country.

On the subject of oceanic circulation, Mr. Wild points out the general influence of temperature, specific gravity, and wind; and he tells us that "the Southern Ocean is the main feeder of its three gigantic off-shoots—the Atlantic, the Pacific, and the Indian Oceans—which it supplies through the medium of both surface and under currents:" but he does not explain the cause of the influx of cold water into the Pacific and Atlantic Oceans from the South. Sir Wyville Thomson considers that vast quantities of vapour are carried through the atmosphere from the Northern to the Southern hemisphere, and that in the latter there is consequently an excess of precipitation over evaporation, thus causing a preponderance of water, which flows back into the Northern hemisphere.

Whether this theory be right or wrong, it does not appear whether Mr. Wild accepts it or not.

A great portion of the work is taken up with observations and diagrams concerning the various sections surveyed by H.M.S. *Challenger*. The scientific seaman will find these chapters full of interest, and if navigating the oceanic area surveyed, will undoubtedly find the details given by Mr. Wild of considerable assistance.

The somewhat fanciful title of "Thalassa," is likely, we think, to frighten possible readers away. It is plainly seen to be part of the get up of the book, but we can hardly regard it as judicious to employ a semi-poetic and, to many, mysterious title in treating of the ocean in a strictly practical and non-poetical manner.

CORRESPONDENCE.

COLLISIONS AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—In your criticisms on my paper on "Collisions at Sea," in your January number, you have mis-apprehended my meaning in the paragraph, page 16, lines 11 and 12, where the candidate says, "He may have been close-hauled on the other tack, and yet not crossing my track."

A sailor speaks of the opposite tack as the other tack, and when saying, "crossing my track," he would mean crossing his path, or crossing a-head of him.

You have read these expressions in the literal sense, and thus made my meaning obscure, and my argument appear absurd.

If you will be kind enough to insert this correction in your February issue, my case will be set right again.

W. P.

SHIPOWNERS AND SURVEYING OFFICES.

To the Editor of the "Nautical Magazine."

SIR,—I trust you may be able to find room in your Magazine for the following letter.

Some short time since I saw a copy of the draft of a circular the Board of Trade sent out to parties interested.* It seemed to be framed in the interest of the poorer class of passengers who travel on deck in coasting steamers. Among its provisions was one which directed that a greater number of these persons should not be carried than six times the number for whom there was any shelter, and that there should be three water-closets when 100 persons are carried on deck. These proposals of the Board of Trade have been, as we now know, opposed by steamship-owners. I have also seen a notice, published by the Committee of Lloyd's Register, to the following effect:—

“All ships classed A for a term of years will, at the expiration of such term (or as soon after as may be practicable), have the word ‘*expired*’ inserted against their names in the Register Book; and if not surveyed and re-classed prior to the re-printing of the Register Book for issue in July next, will appear therein without character.

“The foregoing resolution will likewise apply to ships classed A in Red, whose period of exemption from special re-survey will terminate on the 31st December.

“N.B.—In the case of ships which it shall be made to appear, by letter addressed to the Secretary, have not been in any port in the United Kingdom since 1875, the above resolution will not be applied.”

I have also watched with considerable anxiety a movement which may possibly end, if we are not all fully alive to the subject, in the obtaining of certificates from the Board of Trade on loose surveys, and imperfect information or partial ignorance of the state of the ships and boilers.

The Legislature has decided that there shall *not* be a compulsory survey of all ships, and are the Committee of the Register not resorting to compulsion? Are they not going out of the way to do that which they have no legislative power to do? If a ship ceases

* [We are glad to learn the fact that the Board of Trade in these matters, as in the matter of spring safety-valves, consult the trade before issuing their circulars.—Ed.]

to comply with the rules of any society, her name may be dropped out of the books of that society ; but is not the society giving notice that it will keep the ship's name in the books and place the word "expired" against her name, and publish to the world a statement that she is "without character." I have not heard that the ship-owners have objected to this.

The Legislature has enacted that passenger steamers shall be surveyed, and shall have Board of Trade certificates. I have not heard that the shipowners have objected to this. The certificates carry indemnity, but there would appear to be a wish to obtain that indemnity by a survey which shall be so little onerous as to be practically nothing but pleasant.

The Register Committee are steadily working in the direction of compulsory survey for all ships : that is a trade matter for underwriters and shipowners. There is a movement which may possibly end in a Government certificate of indemnity on a mere formal and nominal survey for passenger ships : that is a trade matter for shipowners. The Board of Trade have announced more than once that they are against surveys altogether, unless a ship is believed to be unseaworthy, when they wish to interfere as police : that is a matter of opinion. The public who go to sea, or who send their families or their property to sea, are the only persons not thought of. I am one of the public, and I take much interest in the subject, and what I want to guard against is that passenger steamers are not hereafter to be allowed to have certificates that are complete as documents, but really guarantee nothing to me, while they give indemnity to the owner—against papers issued on half information, or a mere nominal survey, when my safety is not fully assured. I am quite sure the Board of Trade would not wish this ; but even if they do not take care that it does not come about, it might look very much as if they were rather for making matters pleasant to the shipowners and themselves, than safe for *me*. They are appointed by *my* representatives in Parliament to make things safe for *me*, to see that *I* do not go to sea in a steamer with a bad boiler or a weak hull ; they are appointed to see that boilers are safe, and not to certify them until they can make such an examination as to enable them to give that

guarantee to *me*. Whatever the shipowner or any one else may say is nothing to *me*. It must not come between me and my safety. I, as a passenger, only have to do with passenger ships, and I do not like the look of things. As regards other ships, I can only say that, supposing their owners are content to allow any society to publish to the world that they are "expired" or are 'without character," it will be kind of those owners, and may be of value to me and others, as we shall know what ships to avoid. But would it not be a little too absurd for owners as a body not to object to this when they do object to give to my servants and employés, as deck passengers, the use of a water-closet, or to provide some slight partition to separate from the deck passengers the pigs and their mess, when carried on the same deck, or to provide even shelter for a sixth part of the deck passengers carried?

I am afraid that my letter will look very much out of place in your nautical pages, but I noticed so much common sense in a number I happened casually to open this week that I ventured to write to you, although only

A MERE PASSENGER.

Cork, 1st December, 1877.

A DANGEROUS BINNACLE LAMP.

To the Editor of the "Nautical Magazine."

SIR,—A few weeks ago the captain of a foreign-going screw-steamer, brought to my shop in Belfast one of the outside lamps from the steering binnacle, saying it affected the compass!

Knowing some of the many foolish things which are said to derange the compasses of ships, I smiled at the very unusual charge laid against the binnacle lamp, as I took it from his hand.

The oil vessel was out of it. I remembered, however, that some years ago I found the bowl of a well-made steering compass highly magnetised on one side, and had (after long and interesting experiments to find the cause) to cut a piece three inches by one-and-a-half out of the side of the bowl, which piece I sent to the Astronomer Royal with a detail of the circumstances connected

with it. This made me listen to the strange accusation against the lamp, which I examined, but, of course, could *see* nothing to cause any mischief to his compass.

I took a compass and approached it with the lamp, and at once the needle told the presence of its foe in this instance, and declared *polarised* mischief, too, by *receding* about 45 degrees from its enemy ! I held various parts of the lamp to the compass, and so found the *locality* of the disturbing power.

In lamps of this kind there is generally an overlap seam or rib to strengthen the front—a piece of brass wire being inserted to give neatness and roundness as well as strength to the seam. On opening the seam I found it “ piped ” with *steel* wire (not even soft iron) highly magnetised, as shown before. The shape of the front of the lamp reminds one of a horse-shoe magnet with the poles largely open and projecting downwards and somewhat over the compass when the lamp is in its place. The ends or poles of this steel wire would consequently be about three inches from the compass needles. This wire was about eighteen inches long. Across the *bottom* of the lamp there was another steel wire about five inches long—its ends were not in contact with the longer piece ; it lay in a horizontal “ fore and aft direction.”

No doubt the wire had been a long time in the lamp, some years, perhaps (as the ship was by no means new), and had become magnetised by induction, and that very soon, too, by proximity to the needles.

From all I could learn from the captain, his steering compass had been a serious trouble to him, as he had got the ship swung twice, I think, within a month, and, of course, was still dissatisfied. He found out the location of the fault in this way :—While he was *en voyage*, and being anxious about his compass, knowing its unreliability, he was taking some rough bearings, “ by hand,” of *Polaris*, he took one bearing, and not being pleased with it, he turned the binocular top and lamps round a little out of his way, he found a very different result in looking again at the Polar star, once more he turned back the “ top ” with other results ; then took off the top and got more truthful bearings ; put on the top again, removed the lamps only, and put them on again (all the

guarantee to me. Whatever the shipowner or any one else may say is nothing to me. It must not come between me and my safety. I, as a passenger, only have to do with passenger ships, and I do not like the look of things. As regards other ships, I can only say that, supposing their owners are content to allow any society to publish to the world that they are "expired" or are 'without character," it will be kind of those owners, and may be of value to me and others, as we shall know what ships to avoid. But would it not be a little too absurd for owners as a body not to object to this when they do object to give to my servants and employés, as deck passengers, the use of a water-closet, or to provide some slight partition to separate from the deck passengers the pigs and their mess, when carried on the same deck, or to provide even shelter for a sixth part of the deck passengers carried?

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while without shifting the vessel's head), and so worked at it until he found "Pandora's Box."

I think he deserves a great deal of praise for his perseverance.

All binnacle makers are not compass makers; and some lamp makers or coppersmiths may be ignorant of the evil effects of steel or iron wire inserted in such places; or, indeed, may imagine, as some otherwise intelligent persons do "that because the iron is covered with brass, or even with canvass painted over, no magnetism can get in or out!" and of course they know not what fatal consequences might follow such ignorance or carelessness, probably involving the loss of lives, ships, and cargoes.

I am, Sir, yours respectfully,

FRANCIS M. MOORE.

Belfast, December 17th, 1877.

WIRE ROPES AND PATENT SCREWS.

To the Editor of the "Nautical Magazine."

SIR,—I write to ask you to give publicity to a subject that has given me some thought lately. I have charge of an iron ship whose rigging is set up with patent screws instead of the old-fashioned plan of rope lanyards, and don't see my way clear to get quit of the rigging in case of wanting to cut away the masts. I have been making inquiries of several others interested, and they are in the same fix, and would be glad if you, or any of your numerous readers, could give me a hint on the subject. I think the want has only to be made known, for some inventive genius to supply it. The screws have many great advantages over the lanyard, such as durability, easily set up, giving each shroud an equal strain, &c., but the time may come when we want to cut away a mast to save the ship—and then where are we? I once had a case of cutting away main and mizen-mast, to save a vessel that was thrown on her beam ends in a hurricane, and we had some trouble getting clear of the lee rigging, even with rope lanyards, and I think anyone who has been in the same fix would say the same. Hoping you may deem this worthy of a place in your valuable Magazine,—I remain, yours truly,

LANYARD ROPE.

[In reference to our correspondent's enquiry, we communicated with Messrs. Bullivant & Co., of 2, London Street, E.C., the eminent manufacturers of steel and wire ropes, and have been informed that they have devised a lanyard screw with a disconnecting hook, by which means one man can set up a whole ship's rigging (after it is once in place) in four hours, and can let it all go in a few minutes, if required to cut away the masts. In the latter case the lanyard screw and disconnecting hook would remain attached to the rail, and only the wire rigging would go overboard with the mast. Messrs. Bullivant will be happy to show the arrangement to any one who will call at their office. This is very good so far, but at the same time we cannot help thinking that a pair of strong scissors, with plenty of leverage power, might be made which would cut through the wire ropes themselves.—ED.]

CURVES AND DIAGRAMS OF DEVIATION.

To the Editor of the "Nautical Magazine."

SIR,—I have read in your November issue the notice of Mr. Elson's deviation diagram. You seem to invite the attention of seamen to this subject; permit me, therefore, to say a few words with the same object.

The advantages of representing deviation graphically are well-known and cannot be over-estimated. Why then, as a matter of fact, is this method so little used?

Chiefly, I think, because at the Board of Trade examinations too much stress is laid on the correct use of "Napier's" diagram; the merits of the curve independently of any projection are to some extent lost sight of, and the principle of the graphic method suffers in consequence. "Napier's" projection, though in theory a beautifully concise method to apply deviation, is unnecessary to the curve and slightly distorts it. Surely no seaman need rely on a *diagram* to apply his deviation, but he should look to his *curve* for its direction and amount. I have found it answer very well in practice to construct curves by simply laying off the deviation at right angles to the line which represents the margin of the

compass-card. Such curves may be drawn in different colours on the same card whenever compass-errors are observed during a voyage. The deviation on all points may be then easily retained, and the changes noted which are due to difference of geographical position.

Then, again, it is the "masters" only who are required to construct and use the deviation curve, the practical effect of this being to make a mystery of what is really a very simple matter. I have known men, experienced seamen, intending to pass for "master," speak of the curve as an insurmountable difficulty, and this because they knew little or nothing about it.

In conclusion, Sir, I would suggest—firstly, that the curve should form part of the examination of all candidates for certificates of competency. Secondly, that the curve should be constructed and used without any special form of diagram, the advantages of "Napier's" projection being, in my opinion, neutralized for practical purposes by its complication. Lastly, that captains should be supplied with curves, from which, in fact, the ordinary tables of deviation are compiled.

I take this opportunity to thank you for inserting, a few months ago, a letter on the evils of "Watch and Watch." It is satisfactory to me that the opinion therein stated should have since received such firm support from correspondents of the *Nautical*.

I remain, Sir, yours obediently,

A. S. T.,

An Officer of the Mercantile Marine.

Rio de Janeiro, Dec. 4th, 1877.

EXPEDITIOUS BOAT-LOWERING.

To the Editor of the "Nautical Magazine."

SIR,—During the summer of 1877, an exhibition of models and apparatus of various kinds was held at the Hall of the Fishmongers' Society, London, and I remember that no section of the deeply-interesting collection created more absorbing interest than that of "life-saving," "raft-launching," and "boat-lowering." All the plans were most ingenious, and some very simple, but of the "boat-

lowering" apparatus, I cannot recall to mind one which carried out the principle of lowering the davits and freeing the boat from in-board the vessel. If I remember correctly, the final "cast-off" was accomplished by some arrangement, more or less simple, *in the boat*. It is a very open question, and one very much disputed, as to which is the preferable method, and, like Sir Roger de Coverley, one is forced to admit that "a great deal may be said upon both sides of the question." I am bound to say that my own feelings are in favour of the final "drop" being given from the deck of the vessel, as the officer in charge has his eye to all the details of the emergency, and, from his elevated position, can probably form a better judgment as to the best moment for "letting go." Leaving this part of the subject to the discussion of whosoever it may concern, I desire, if you will permit me, to place before your readers a sketch of one boat-lowering apparatus which has been invented and patented by an old pupil of mine, Mr. Godfrey Laurence, and which, I think, deserves prominent notice from its ingenuity and many distinct advantages.

It consists of lowering-davits which can be checked at any angle with the ship's side, and, by a simple arrangement at the davit-head, the boat may be dropped at the most judicious moment well clear of the ship's side and of the davit-head.

The davits are curved or straight, according as the boat when stowed is carried in or out-board, and hinged at their lower ends to the ship's side (outside, of course), and are fitted at their upper end with a head which roughly resembles that of a bird. The resemblance is further carried out in detail, as each head has an immovable upper jaw (beak), the lower one working freely on a pin at its base. Inside the "skull" is a sheave, adapted in size to allow free working room for the chain which lowers boat and davit. Between the standards, on the deck, is a beautifully compact and very powerful winch, to which these chains are led, the winch being controlled by a very powerful brake, which enables the operation of lowering to be performed with consummate ease, rapidity, and certainty.

The action of the lower jaw, upon which the final "drop" depends, is controlled by a lowering-rope (chains may be fitted

instead, if preferred by those who fear kinks or turns in rope-gear, a risk which can only occur through carelessness). This rope being belayed, or checked, at a point selected by the officer in charge of the operation, causes a sudden cessation of strain upon the chains which support the davit-head and the boat, the lower jaw instantly "drops," the boat is as instantly disengaged, and falls well clear of the ship's side and of the davit-head, the officer having selected the best moment for letting go by carefully watching the lee-roll of the vessel.

Of course, the success of the operation depends upon care with the checking-rope or chain, and selecting the proper moment at which to apply it; or, in other words, the angle to which the davits are lowered must be taken into consideration when the ship is rolling heavily. This requires more care than skill on the part of the operator.

At the after davit-head a block is fitted, through which a long "painter" is rove, so that the boat streams well clear of the side, and can be hauled-to by the short painter when taking in passengers, and sheered off again with ease and safety.

For hoisting the boat to the davit-head again, the chains are fitted with a "clip"—such as watchmakers use to attach a watch to the guard—very handy for use. When the boat is at the davit-head, the triangularly-shaped link which is to sling her is slipped between the jaws of the beak, a metal band slips under the lower jaw, supporting it, and a metal fid is inserted which keeps everything snug; when the davits are being lowered, this fid falls out and hangs by the small chain which secures it to the davit-head.

The whole thing is so ingenious, and, with common care in working it, ought to be so very rapid and safe in action, that I trust, Sir, you will pardon the length of my letter and permit me to introduce an old pupil's work to your nautical readers.

I remain, Sir,

Your most obedient servant,

ARTHUR B. MARTIN.

Norie's Nautical Academy,
157, Leadenhall Street.

WATCH AND WATCH.

To the Editor of the "Nautical Magazine."

SIR,—Through the medium of your widely-spreading, useful columns, I should like to contribute to the keeping open of the question, broached by "Watch and Watch" some few months back, if you can spare me space amongst the, doubtless, numerous contributions offered to you.

The subject was, as your readers doubtless remember, the real necessity existing for the present system, of officers keeping watch and watch in certain classes of ships, being done away with. The arguments were many in favour of this, and they are now well known; but, for the sake of those who may have overlooked the importance of the reform required, thus letting the subject pass from their minds, I will recapitulate such reasons as will, doubtless, re-open the question to them.

First of all let me mention, that the demand for three watch officers does not come from the ordinary ships trading as of old, for these are as manageable now as they ever were; although, when on the homeward passage, these ships are being cleaned for port, it takes all a mate's time to superintend and keep a careful watch as well—many a time her yards require trimming, while the officer of the watch might be seen with a paint brush in his hand doing a little bit of fancy work. However, there is a greater possibility of this state of affairs lasting in such vessels than in those quoted in this movement. Is it, perhaps, necessary to remind those on shore, that ships of the present day are very different to those of the past—now you have ships of over 400 feet long, having, maybe, four decks; this may seem a small matter to an unthinking person, but when one reflects on the increased vigilance required for the maintenance of order, &c., in a ship of this sort—the numberless nooks and corners to be kept clean—a seaman will realize what it is to be chief officer of such a vessel; he will also realize that whereas formerly a mate could keep his watch, and still look after the ship, there being only one deck, and that a small one, he must now of a necessity visit parts of the ship requiring him to do so when off watch, it being impos-

sible to be sufficiently handy without, when one also knows that not only does the work increase in such wise, but everything becomes augmented, even the entering up of the ordinary ship's log-book swelling to a labour of some magnitude: what with drafts of water, depths of water in the various compartments, and numberless other things required to maintain the extreme vigilance necessary in such a huge concern as, say, one of the large mail steamers, this log-book becomes a matter requiring some time each day to keep written up to date. Notwithstanding all this, the officer is supposed to go on the bridge and keep a four hours' watch often against wind and rain, increased by the vessel's great speed driving up channel, maybe, even in the dead of winter, and just returned from the tropics, as fresh, or rather, as "wide awake" as if he had comfortably "turned in" during his watch below.

It is also the same with a second officer; he has to keep the papers issued to a mail steamer by the post-office authorities, besides the numberless things required by reason of the careful navigation practised, such as compass errors, compass comparisons, drawing of Napier's diagrams, &c., &c.; indeed, this navigation question is a great deal too lightly spoken of, and applies equally to first and second mates. When one takes all these things into consideration, it is a wonder that more collisions do not happen. Doctors at sea agree in saying that watch and watch against wind and all weathers in a fast-going steamer is injurious to the eyes; how much more so when previously fatigued by a watch below, encroached upon by the multifarious duties arising from the increase in size, speed, &c., of ships of the present day? Companies cannot give this writing to clerks; a clerk cannot keep a log-book; that is too evident to need argument; 'as also, is it impossible for any but a seaman to go round a ship and find out defects, make notes for list of demands, &c. (which lists are no small matter in a vessel of the above dimensions), besides the paper and pen work of navigation. It may be argued that junior officers might do this, but I can scarcely entertain the idea, for they are not as responsible as the chief mate is—it would be just as reasonable to suppose that the colonel of a regiment should leave things to his major, captains, or lieutenants, for which he is the responsible

party. The chief mate has the greatest position (after the commander) so must have the greatest responsibilities. Give this responsibility to a junior officer and you create him first man in the ship—would that do? No; well then, the chief officer must be the man, and still he is the man who must keep “watch and watch!” Why should this be? Why cannot a third mate, when possessing a Board of Trade certificate, be permitted to keep watch; in fact, why cannot anyone with a certificate keep a watch, so long as the number of his certificate be on the articles. The class of ships I mention generally have four or five officers—often six—who in many instances possess certificates as masters. Surely one of these might be allowed to keep a watch! It would be relieving an existing and fast increasing want, and conceding a point to a body of men who deserve to be treated with consideration by the country, whose wealth so much depends upon their vigilance.

Apologising for the length of my letter, and trusting you will be able to find space for my remarks—the good intention experience tells me will not be wanting—

I am, Sir, faithfully yours,

R. W. P., West India Mail.

MARINE INVENTIONS.

Monthly List of Patents.—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all enquiries should be addressed.

ENGLISH.—APPLICATIONS.

4792. Archibald Henry Hamilton, of Cavan, Ireland. “Improvements in ships or vessels.”

4798. Charles William Siemens, Westminster. “Improvements in armour plating.”

4854. Wm. Smith Melville, Mile-end Old-town. For an invention of “Facilitating the hoisting and insuring the lowering of

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the yards or gaffs of steam or sailing vessels, minimising chafe and working smoothly on masts, yards bracing sharp up with ease without straining ties."

4906. Charles Emery, Boston, Massachusetts, U.S.A. "Improvements in the construction of bed-bottoms and other parts of ships' sleeping berths. Also applicable to other ships' furniture."

4988. John Commins, Charlestown, South Carolina, U.S.A. "Improvements in belts and attachments for preventing sea-sickness."

4947. William Wesley Shoe, Philadelphia, Pennsylvania, U.S.A. "Improvements in apparatus or mechanism for steering or propelling boats or vessels."

24. David Carrol, Spring-creek, county of Warren, State of Pennsylvania, U.S.A. "Improvements in ships' logs."

25. William Phillips Thomson, C.E., Patent Agent, of 6, Lord-street, Liverpool (a communication in trust for Mons. Fidele Motte, Brussels, Belgium). "Improvements in the mode of propelling ships and other vessels through the water, and an apparatus therefor, said apparatus to be called the 'attracteur.'"

61. William Richard Colbourn and Walter Somers, of Hales Owen, Worcestershire. "Improvements in the manufacture of anchors."

84. Andrew Alexander, Sheffield, Yorkshire. "Improvements in the construction and manufacture of armour-plates for ships', forts, and other like structures."

111. Robert Henry Armit, of Craven-street, Middlesex, and Thomas Holt White, Richmond, Surrey. "Improvements in the construction of ships' propellers and other like articles with helical surfaces."

150. Edward Chism, Sligo, Ireland. For an invention of "Improvements in raising submerged ships."

160. Thomas Bassnett, Liverpool. For an invention of "Improvements in transmitting signals on board ship, and in other vessels and situations, and in apparatus therefor."

ABRIDGEMENTS.

1558. William Atkinson and Robert Parsons, both of South Lambeth-road, London. "Improvements in the mode of, and

apparatus for raising sunken ships and other submerged bodies." This consists of an iron buoy fitted inside with a cylinder and piston, the bottom of the cylinder being open to the water, the piston is raised to the top of the cylinder when the buoy sinks, and when attached to the sunken vessel the air is pumped into the cylinder by means of a pipe attached at top ; the piston gradually descends until the cylinder is full.

1855. Alexander Carnegie Kirk and Edmund Hunt, of Glasgow. "Improvements in and connected with screw propellers." This invention relates to the constructing of screw propellers in an improved manner, the securing of the blade shanks by means of collars formed on them by placing them between two parts of the boss, which are bolted together, or by screwing them into the boss, and improved methods of feathering the blades thereof, the transmitting of turning or feathering movements to the blades by a central feathering shaft extending through a length or lengths of the propeller shaft, and turning a cross-head connected by links to levers on the blade shanks, or by means of a vertical shaft, which by turning a screw on a stationary piece on which the back of the propeller boss revolves imparts an endway motion to a pulley-piece, having loosely on it a ring, connected by links to levers on the blade shanks.

1936. George Beeforth Newton, Junr., Kingstown-upon-Hull. "Improvements in torpedoes." This consists in forming torpedoes of two cases, inside the inner of which the explosives are placed, and between the two cases the space is filled with sand or other material to give it weight sufficient to sink when placed in the water, and remains where it is placed uninfluenced by currents of water. A neck is formed on one end of the case for the admission of the explosives, which is effectually closed by cementing in a dome-shaped piece of iron, over which is placed a bung or large cork embedded in cement and covered by an iron lid, through all of which the fuse passes, which is secured on the outside by an india-rubber tube, which is lapped tightly to it.

1940. Henry Schuyler Ross, Chicago, Illinois, U.S.A. "Improvements in apparatus for carrying and lowering boats ; applicable also for lowering torpedoes." This consists in arms or davits of equal

radius, hinged on the side of the vessel near the water-line, on top of which is formed a cradle on which the boat is placed ; between these arms or davits is fixed another arm on a parallel but different centre, but of the same radius, which acts, when being lowered, as a parallel motion to keep the boat in the same position ; these are lowered until quite under water, which leaves the boat perfectly free at a considerable distance from the ship's side.

2005. Charles Sholl, Manchester." "An improved method of, and apparatus for, removing, disabling, or destroying torpedoes and other dangerous and destructive objects placed in harbours, rivers, channels, and other waters, which invention is partly applicable to rocket apparatus." It consists of three or more mortars placed radially on the deck of a small steamer, out of which are projected grapnel irons fastened together at suitable distances by ropes, and also attached to the steamer, which, when being towed in by said ropes, disconnect or explode any torpedoes lying in their path, connected to the shore by wires or otherwise.

2045. Alphonso Lefargue and Claude Martin, Kensington, London. "Improvements in apparatus for steering steam and other vessels by hydraulic power ; also applicable to the driving and reversing of steam and other motive power engines." This consists of a cylinder of suitable capacity, securely fastened to the deck of the vessel, and a piston with a trunk or hollow piston-rod large enough to admit of the rudder-head, and also of a nut or cross-head containing friction-rollers, which are made to rotate in a vertical plane, by the motion of the piston, into correspondingly convoluted or inclined grooves of a nut fast to the rudder-post, thereby giving the required motion to the rudder.

2061. James Humphreys, of Barrow-in-Furness. "Improvements in marine engines." These improvements consist in the arrangement of the cylinders as close to the crank-shaft as possible, and the piston-rod working at the end furthest from the said crank-shaft, whereby the advantage is obtained of having long connecting-rods and eccentric-rods with moderate-sized cylinders.

2123. William Alexander Brice, London. "Improvements in boat davits." This consists of a lever or handle attached to the davit, just above the bulwark-rail, to facilitate the turning round

of the davits, and a pin or bolt fastened through the same in lieu of guy chains.

8161. Jean Casselli, Florence, Italy. "Improvements in apparatus for steering or directing ships or vessels." This is an invention for steering ships by the variations of the compass by means of electro-magnets, too complicated to be described without drawings. The appliances of which the invention is composed, are—a special suction and force-pump; an arrangement of hydraulic presses; an automatic electric manipulator; an auto-directive compass; pedaloscope or indicator of the angular motions of the rudder; and an auto-motive marine telescope.

BELGIUM.

43520. I. Venmaekers and O. Dejaer. "Vessels safe from rolling."

43548. G. O. Topham. "Improvements in suspending seats, couches, and berths on shipboard."

FRANCE.

117956 Chaumel, of Bordeaux. "A helm, with a double-jointed lever for sailing vessels and steamers."

117995. Mourlon, of Paris. "Improvements in opera and marine glasses."

118082. Huct. "Improvements in building and propelling ships."

118103. Freck. "A swimming apparatus."

118261. Carpenter. "A screw propeller."

118290. D'Amora. "A cardanico-elastic hammock for preventing sea-sickness."

GERMANY.

63. J. Calvin Thompson, of Brooklyn. "Apparatus for balancing seats, couches, or berths on board ship."

2951. C. Pieper, of Berlin. "An apparatus for steering vessels by hydraulic pressure."

CEYLON.

140. Ernest Bazin, of Paris. "Improvements in dredging

boats, and apparatus for extracting slime and sand from the river, or sea from foundered vessels, and for cleansing ports, harbours, ponds, or canals."

AMERICA.

197980. Elisha Robbins, of Cotuit, county of Barnstable, Massachusetts, U.S.A. "Improvement in deck-supports for ships' masts." It consists of a wedge-shaped elastic collar of india-rubber to fasten and support the mast in each deck through which it passes, on the top and bottom of which are screwed solid rings to keep it in its place.

197995. David Carrol, Spring-creek, county of Warren, Pennsylvania, U.S.A. "Improvement in ships' logs." The invention consists of a tube passing down through the bottom of the vessel and forming a well-hole below, in which two revolving wheels or screws are arranged, of which the upper is placed parallel to the longitudinal axis of the vessel, the lower at right angles to the same. The revolutions of the screws are indicated by suitable transmitting gearing and registering apparatus inside of the vessel. Below the screws is arranged a longitudinally and laterally swinging speed indicator, that works a pointer along a graduated plate.

198000. James Curtis, Middletown, in the county of Montgomery, Missouri, U.S.A. "Improvement in propelling and dry-dock attachments for vessels." It consists essentially of balanced propelling wheels at the end of a lateral revolving shaft, in connection with water induction and eduction trunks. The trunks are arranged with tightly-closing, hinged, or sliding gates, that may be closed, forming a chamber or dry-dock, from which the water is pumped for repairing the wheels, forming a kind of submarine dry-dock.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
21	ENGLAND—South Coast—The Lizard	New Siren Trumpet Fog-Signal.
22	" " Southampton Water	New Lights.
23	NETHERLANDS—Stavenisse—East Schelde	Alteration of Light.
24	BALTIC ENTRANCE—The Sound—Konge Deep	New Leading Lights on the Kroner Battery
25	" " " "	New Leading Lights on Provestenen Battery.
26	" " " Svinbadan	Change of Fog-Signal.
27	" " Drogden Channel—North Rose Shoal	New Light.
28	" " " Dragor	New Leading Lights.
29	SPAIN—North Coast—Cape Mayor	Irregular Action of Light Rectified.
30	MEDITERRANEAN—Corsica—Pietra Isle	Light Improved.
31	ADRIATIC—Bari (New Harbour)	New Light and Fog-Bell.
32	" Ancona—N. Mole Battery	Discontinuance of Light.
33	" Antivari Bay	Temporary Discontinuance of Light.
34	BAY OF BENGAL—Ceylon—Little Basses	New Light and Fog-Bell.
35	" " Great Basses	Proposed Alteration in Fog-Bell.
36	" " Point de Galle	Approach to Harbour; Inland Marks.
37	INDIA—East Coast—Santipilly Lighthouse	Position Rectified.
38	JAPAN—Inland Sea—Kobe (Hiogo)	New Harbour Light.
39	RUSSIAN TARTARY—Peter the Great Bay—Port Vladivostok—Skrypleff Island	New Light.
40	SOUTH AUSTRALIA—Investigator Strait—Port Moorowie	New Buoys and Directions.
41	AUSTRALIA—Victoria—Warrnambool	New Buoy for Breakwater.
42	" East Coast—Cape Bowling Green	Temporary Alteration of Light.
43	UNITED STATES—Cal—San Francisco	New Automatic Signal Buoy outside the Bar.
44	" N. Carolina—Croatan Light Station	New Fog-Bell.
45	" " Pamlico Sound	Alteration in Position of Light.
46	" Rhode Is.—Narragansett Bay—Dutch Island	New Fog-Bell.

NAUTICAL NOTICES.

21.—ENGLAND.—*South Coast.*—*Fog-Signal at the Lizard.*—A Siren trumpet fog-signal has been established at the Lizard, which will give one blast every five minutes, during thick or foggy weather.

22.—ENGLAND.—*South Coast.*—*Southampton Water.*—*Netley*

Pier and Itchin River.—A fixed green light is about to be exhibited on Netley pier; also, a light-vessel (*Harpy*) is moored at Itchin river entrance, from which a fixed red light is exhibited.

23.—NETHERLANDS.—*Light at Stavenisse.*—(*Eastern Schelde*).—A new lighthouse has been erected a short distance eastward of the old one at Stavenisse. It shows a fixed white light, is elevated 85 feet above high water, and visible 11 miles through an arc of 270°, lighting the Keeten and Mastgate, in the East Schelde. The lighthouse of iron frame work, square, painted brown, and 25 feet high, is in lat. 51° 35' 42" N., long. 4° 0' 18" E.

24.—BALTIC ENTRANCE.—*The Sound.*—*Konge Deep.*—*Lights on Tre Kroner Battery.*—Two leading lights are now exhibited from small iron towers, 185 yards apart, on Tre Kroner battery, Konge deep. They are fixed red lights, and when in line bearing N. 29° W., lead through Konge deep in mid-channel; they are elevated respectively 47 and 37 feet above the sea, and are visible 11 miles.

25.—BALTIC ENTRANCE.—*The Sound.*—*Konge Deep.*—*Lights on Provestenen Battery.*—Two leading lights are now exhibited from poles, 103 yards apart, on Provestenen battery, Konge deep. They are fixed red lights, and when in line bearing S. 15° W., lead between Middel ground and Middel pult; they are elevated respectively 43 and 33 feet above the sea, and are visible 5 miles. Variation 12 $\frac{3}{4}$ ° W.

26.—BALTIC ENTRANCE.—*The Sound.*—*Change of Fog-Signal at Svinbadan.*—The fog-bell at Svinbadan light-vessel has been replaced by a fog-trumpet giving two signals every minute. Each signal consists of three strong blasts, and each successive blast of two seconds' duration is separated by a silence of two seconds.

27.—BALTIC ENTRANCE.—*Drogden Channel.*—*Light on North Rose Shoal.*—A light is now exhibited from a tower recently erected on North Rose shoal. It shows a fixed white light, varied by a red flash every thirty seconds, elevated 45 feet above the sea, and visible 10 miles. The light tower constructed of granite on a stone foundation is situated in about 14 feet water, S.E. by E. one mile from Kastrup harbour, Amager island. Position, lat. 55° 38' 10" N., long. 12° 41' 25" E.

28.—BALTIC ENTRANCE.—*Lights at Dragor.*—Two leading lights are now exhibited from small square towers, 412 yards apart, erected close to the north end of Dragor town, Amager island. They are *fixed red* lights, and when in line bearing S. 18° W. lead through Hollænder deep in mid-channel; they are elevated respectively 62 and 31 feet above the sea, and visible 10 or 12 miles. Position of low light, lat. 55° 36' N., long. 12° 40' 30" E. Variation 12¾° W.

29.—SPAIN.—*North Coast.*—*Port Santander.*—*Cape Mayor Light.*—The irregular action of Cape Mayor revolving light has been rectified, and the machinery repaired; the light now revolves every minute as formerly.

30.—MEDITERRANEAN.—*Corsica.*—*Pietra Light.*—The *fixed red* light on Pietra Isle, at the entrance of the harbour of Rousse Isle, has been improved, and is now visible 9½ miles.

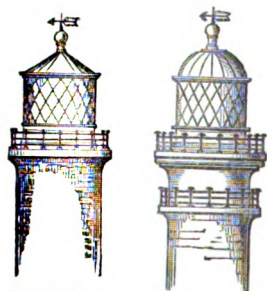
31.—ADRIATIC.—*Port Bari (New Harbour).*—*Light on Breakwater.*—A light is now exhibited from a small tower erected near the extremity of the breakwater in course of construction at the New harbour, Bari. It is a *fixed red* light, elevated 31 feet above the sea, and visible 5 miles. The light tower, circular, built of stone, and surmounted by an iron turret painted red, is situated 355 yards from the brick work Mole head. Position as given, lat. 41° 8' 10" N., long. 16° 52' E. Also a *bell buoy* has been placed 218 yards westward of the light tower at the entrance of the new harbour, Bari, to mark the submerged extremity of the breakwater in course of construction.

32.—ADRIATIC.—*Ancona.*—*Discontinuance of North Mole Battery Light.*—The fixed white light heretofore exhibited from the North mole battery, at Ancona, when the state of the sea prevented the fixed red light on the North mole head being shown, has been discontinued.

Note.—Vessels entering Ancona, on such rare occasions when the North mole head light is not exhibited, must now be guided by the *fixed green* light on the South mole head, situated 66 yards in S.S.W. direction from the extremity of the breakwater. The South mole head should not be rounded at a less distance than half a cable.

33.—ADRIATIC.—*Antivari Bay*.—*Temporary Discontinuance of Light*.—The fixed white light on Volovica point, Antivari bay, is not at present exhibited.

34.—BAY OF BENGAL.—*Coast of Ceylon*.—*Lighthouse on the Little Basses Rocks*.—The lighthouse on the Little Basses Rocks, off the S.E. Coast of Ceylon being now nearly completed, is intended to exhibit the light therefrom on or about the 25th March, 1878. It will give *two white flashes* in quick succession *every minute*, showing all around the horizon at an elevation of 110 feet above the sea, and visible about $16\frac{1}{2}$ miles. In thick and foggy weather a bell will be sounded *twice* in quick succession *every half-minute*. Further notice will be issued when the light is shown.



Great Basses. Little Basses.

By day the Great and Little Basses lighthouses will be distinguished by their difference in form as shown in the margin. The lantern of the Great Basses has a conical roof, and the tower has only one gallery at the top. The lantern of the Little Basses has a domed roof, and there are two galleries at the top of the tower.

35.—BAY OF BENGAL.—*Coast of Ceylon*.—*Great Basses Fog-Signal*.—On or about 25th March, 1878, the character of the fog-signal at the Great Basses lighthouse will be altered, and the bell will thenceforth be sounded in thick and foggy weather once every 15 seconds. Further notice will be issued when the alteration is made.

36.—BAY OF BENGAL.—*Ceylon*.—*Approaches to Point de Galle Harbour*.—*Inland Marks*.—From Point de Galle roads the Haycock bears about N. by E. nearly 20 miles. It is a high conical mountain, in lat. $6^{\circ} 20' N.$, and is very conspicuous from the offing in sailing round the south-west part of the island from Colombo to Dondra head. About 9 miles eastward of the Haycock there is a table hill with a knob or hummock on it, which is also visible from the road. The land to the westward is generally low, with cocoa-nut trees fronting the sea, but to the

eastward of Point de Galle it is formed of several ridges of hills of various aspects. Adam's Peak, which bears about N. by E. $\frac{3}{4}$ E. 50 miles from Galle Fort, is a magnificent landmark, 7,379 feet high, and sometimes visible 70 or 80 miles.

37.—INDIA.—*East Coast.—Santipilly Lighthouse.*—This lighthouse stands $1\frac{1}{2}$ miles north-eastward of its hitherto assigned position on charts. The correct geographical position, as determined by the great trigonometrical survey of India, is as follows:—lat. $18^{\circ} 4' 56''$ N., long. $83^{\circ} 37' 35''$ E. From the shoalest part of the Santipilly reef, where there is a depth of only 7 feet, the lighthouse bears N. $52^{\circ} 30'$ W., or N.W. $\frac{5}{8}$ W., distant $6\frac{1}{2}$ miles, and Santipilly peak bears N. $46^{\circ} 30'$ W., 11 miles.

38.—JAPAN.—*Inland Sea.—Harbour Light at Kobe.*—On 15th August, 1877, a light was exhibited from a staff on the Eastern pier head of the Foreign Concession at Kobe (Hiogo), gulf of Ōsaka. It is a *fixed green* light, elevated 42 feet above the sea, and visible about 6 miles. The staff, 34 feet high, and dwelling are painted white.

39.—RUSSIAN TARTARY.—*Peter the Great Bay.—Port Vladivostok.—Light on Skrypleff Island.*—A light is now exhibited from a lighthouse recently erected on the south point of Skrypleff Island, Eastern entrance of Eastern Bosphorus, straight approach to port Vladivostok. It is a *fixed white* light, elevated about 150 feet above the sea, and visible 15 miles. The lighthouse is about 18 feet high. Position, lat. $43^{\circ} 1' 45''$ N., long. $131^{\circ} 58'$ E.

40.—SOUTH AUSTRALIA.—*Investigator Strait.—Port Moorowie.*—Three buoys have been placed just east of Point Gilbert, to mark the entrance to this anchorage. 1. The middle chequered buoy, with staff and ball, painted black and red, and cheese-shaped, is placed on a rocky patch, having little more than 4 feet 6 inches of water over it at low-water springs. This patch covers an area of about 350 feet, and lies nearly in mid-channel. Vessels working into or out of the anchorage should not approach the chequered buoy nearer than half a cable's length. 2. A cheese-shaped red buoy, with staff and ball, is placed on the end of a reef in about 7 feet of water at low water, bearing E. by S. $\frac{1}{2}$ S. from the above-mentioned chequered buoy, there being a channel between

the red buoy and the chequered buoy of 9 feet at low water. 8. A cheese-shaped black buoy, with staff and ball, has been placed in 8 feet at low water on the shoal forming the western side of the anchorage. This buoy lies nearly due west from the chequered buoy, or in a line with the extreme outer end of Point Gilbert, leaving a channel between having 9 to 10 feet through at low water.

Note.—Using either of the above channels, and steering for the large store above the landing place, will lead into a pool (having a depth of not less than 8 to $3\frac{1}{2}$ fathoms at low water) capable of holding 10 or 12 small vessels. Running in from seaward the soundings gradually decrease until not more than 9 feet exists in a line with the buoys, after passing which it will soon deepen. A convenient position for anchoring should then be taken up.

41.—AUSTRALIA.—*Victoria.*—*Warrnambool.*—In order to prevent vessels going too near the site where blocks have been deposited for the breakwater, a black buoy has been placed in $8\frac{1}{2}$ fathoms, about $2\frac{1}{2}$ cables to the S.E. of the green light on the jetty, with the upper lighthouse N. by E. $\frac{1}{2}$ E.

42.—AUSTRALIA.—*East Coast.*—*Temporary Alteration in Cape Bowling-Green Light.*—On 20th October, 1877, the following alteration was made in the character of Cape Bowling-green light, pending the removal of the lighthouse to another position, viz. :—The revolving light was discontinued ; and in place thereof a *fixed white* light was exhibited from a flagstaff situated 150 yards southward of the lighthouse. This temporary light will be visible in clear weather from a distance of about 10 miles.

43.—UNITED STATES.—*San Francisco.*—*Signal Buoy outside San Francisco Bar.*—An automatic signal buoy, giving blasts of a whistle at short intervals, has been placed off the outer bar of the Port of San Francisco, in $15\frac{1}{2}$ fathoms, mean low water. The buoy is painted black and white in perpendicular stripes. Magnetic bearings and distances of prominent objects are as follows :—Extreme end of Point Reyes, N.W. by W. $\frac{7}{8}$ W., $22\frac{1}{2}$ miles ; Point Bonita lighthouse, N.E., $7\frac{1}{2}$ miles ; Inner Bar buoy, N.E. by E., $4\frac{1}{2}$ miles ; Fort Point and Alcatraz lights, just open, N.E. $\frac{7}{8}$ E. ; Point Pedro, S.E. $\frac{1}{2}$ E.

44.—UNITED STATES.—*North Carolina.*—*Fog-Bell at Croatan Light Station.*—A fog-bell has been placed on the roof of the north side of the keeper's dwelling of the Croatan lighthouse, which during thick and foggy weather, will be struck by machinery at intervals of *fifteen seconds*.

45.—UNITED STATES.—*North Carolina.*—*Pamlico Sound.*—*Alteration in position of Roanoke Marshes Light.*—This light is now exhibited from a lighthouse erected 200 feet S.S.E. of the old lighthouse, which will be removed : It is a *fixed red* light, elevated 38 feet above the sea, and visible 11 miles. The lighthouse, square and painted white, is built on 7 screw piles, in 9 feet water ; the lantern is painted red, roof brown.

46.—UNITED STATES. — *Rhode Island.*—*Narragansett Bay.*—*Fog-Bell at Dutch Island.* — *Light Station.*—During thick and foggy weather a fog-bell will be struck by machinery, at intervals of *fifteen seconds*, at Dutch Island light-station.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY.

No. 29.—SOUTH AMERICA PILOT, Part I., Notice 7.—Information relating to harbours and dangers on the east coast of South America.

No. 30.—WEST INDIA PILOT, Vol. I., Notice 5.—Information relating to Dutch Guiana, Tobago, Venezuela, Nueva Granada, Old Providence island, Honduras, and Belize.

No. 31.—SOUTH INDIAN OCEAN, MADAGASCAR.—Information relating to dangers off the west and north coasts of Madagascar, and to Eagle island, Amirauté isles.

No. 32.—SOUTH AMERICA PILOT, Part II.—Information relating to Magellan strait.

No. 33.—PARTIAL REVISION OF WEST COAST OF HINDOSTAN PILOT.

No. 34.—MEDITERRANEAN SEA, ARCHIPELAGO.—Information relating to the gulf of Salonika, and to Kavala bay, coast of Roumelia.

CHARTS, &c., PUBLISHED BY THE HYDROGRAPHIC OFFICE,
ADMIRALTY, IN NOVEMBER AND DECEMBER, 1877.

No.		s.	d.
1459	Hong-Kong :—Man-of-war anchorage	1	6
541	Brazil :—Rio de Janeiro harbour	1	6
404	Australia, Bass strait :—King island	1	6
2491	United States :—Approaches to New York... ..	2	6
1030	Australia, east coast :—Great Sandy strait, southern portion	2	6
830	India (sheet 5), Bay of Bengal :—Bassein river to Pulo Penang, including the Andaman and Nicobar islands and the north coast of Sumatra	2	6
83	Japan :—Channels between Misima Nada and Iyo Nada	2	6
842	Siam :—Salang or Junkseylon island	1	6
2712	Mediterranean, Adriatic :—Zirone channel to Curzola	2	6
1381	A new plan of cape Farina anchorage has been added.		
970	A new plan of Canahauan islands has been added.		

OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1877.

(This list is completed to the 18th of each month.)

154. *Charles*, wood; built at Prince Edward's Island in 1865; owned by Thomas Steel of Ayr; tonnage, 253 and 243; Gulf of Bothnia to Irvine, Ayrshire; timber; lost at Pennyland, near Serabster, October 15, 1877. Inquiry held November 28, 1877, before Rutherford and Cormack, J.P. Nicolas and Jones, N.A. Master in default, and showed want of seamanship in neglecting to take any precaution for the safety of the vessel beyond letting go a second anchor. Certificate suspended for six months.

162. *Charles Davenport*, wood; built in the United States in 1856; owned by R. S. Allen and others, of Newcastle; tonnage, 1,033; Tyne to Carthagen; coals; stranded on the Varne; and afterwards, after having been in collision in the Downs, and towed to Margate, was run ashore on the Newgate Rock, and became a total wreck. Inquiry held at South Shields, December 4, 1877, before Yorke, Stip. Mag. Holt and Ward, N.A. Evidence very untrustworthy. Master found in default, and suspected of endeavouring to mislead the Court, alterations having been made in the log book. Certificate suspended for twelve months.

167. *Kate*, s.s., iron; built at Wellington Quay in 1871; owned by Mr. R. Harrowing and another, of Whitby; tonnage, 627; Barrow-in-Furness to Riga; steel rails; foundered at sea, November 11, 1877. Inquiry held at Liverpool, December 12, 1877, before Rothery, W.C. Grant and Jones, N.A. Casualty due to (1) the stoppage of the engines, (2) there not being sufficient sail power to keep the vessel before the wind, and (3) the cargo shifting. No charge proved against the master.

169. *Collingwood*, wood; built at Prince Edward's Island in 1874; owned by Messrs. Morgan and Tutton, of Swansea; Betts Cove, Newfoundland, to Swansea; copper ore; abandoned in the Atlantic, November 12, 1877. Inquiry held at Swansea, Decem-

ber 13, 1877, before Fowler, Stip. Mag. Visconti and Hight, N.A. Casualty due to vessel having become disabled in mid-Atlantic from exposure to a series of gales. Master justified in abandoning her.

170. *Duesbery*, wood ; built at Deptford, Durham, in 1867 ; owned by Mr. W. H. Turner and others, of London ; tonnage 384 ; Demerara to Frontera de Tabasco ; ballast ; lost in Arcas Bay, Gulf of Mexico, on August 18, 1877. Inquiry held at Liverpool, December 14, 1877, before Rothery, Wreck Commissioner. Grant and Jones, N.A. Master in default for not using every endeavour when the ship grounded to get her off. Certificate suspended for twelve months.

172. *Chin Yang*, wood ; of St. John's, N.B. ; owned by William Wright, of Liverpool ; New York to Southampton ; wheat ; lost on Warden Ledge, Solent. Inquiry held at Newport, Isle of Wight, December 12, 1877, before Popham and Lowther, J.P. Pickard and Ronaldson, N.A. Master committed an error of judgment in entering the Solent without a pilot.

176. *Donna Maria*, wood ; built at Quebec, in 1861 ; owned by J. F. Tully, of South Shields ; tonnage, 772 ; Tyne to Savona ; coals ; lost in the Channel, November 24, 1877. Inquiry held at South Shields, December 13, 1877, before Yorke, Stip. Mag. Aplin and Castle, N.A. Casualty due to an error of judgment on the part of the master in miscalculating the distance run and set of the current. Certificate returned.

177. *Gauntlet*, wood ; built at Prince Edward's Island, in 1869 ; owned by Mr. T. W. Honey, Liverpool ; tonnage, 367 ; Cardiff to Pernambuco ; coals ; abandoned at sea, November 22, 1877. Inquiry held at Liverpool, December 17th, 1877, before Rothery, Wreck Commissioner. Grant and Jones, N.A. Master justified in abandoning the vessel, and no blame due to anyone.

178. *Alpheta*, wood ; owned by Mr. R. H. Penney and others, of Shoreham ; Bremerhaven to Cardiff ; ballast ; stranded on Bembridge Shoal, Isle of Wight, November 21, 1877. Inquiry held at Ryde, December 19, 1877, before Coape and Lowther, J.P.

Pickard and Curling, N.A. Master in default for not verifying his position with the lead. Certificate suspended for three months.

179. *Ceres*, wood ; built at Quebec in 1860 ; owned by William Cochrane, the master ; tonnage, about 1,000 ; Moulmein to Falmouth ; teak ; stranded on or near Carndue Rock, one of the Manacles, outside Falmouth, November 22, 1877. Inquiry held at Falmouth, December 15, 1877, before Webber and Bennets, J.P. Powell and Curling, N.A. Casualty caused by the master neglecting to verify his position by taking proper bearings from the Lizard Light, and for hauling his ship up before sighting the light on St. Anthony's Point. Certificate suspended for three months.

181. *Speranza*, wood ; built at Sunderland in 1869 ; owned by Mr. G. B. Meager, of Swansea ; tonnage, 446 ; Betts Cove, Newfoundland, to Swansea ; copper ore ; abandoned in the Atlantic Ocean, November 23, 1877. Inquiry held at Swansea, December 19, 1877, before Fowler, Stip. Mag. Visconti and Hight, N.A. Master justified in abandoning the vessel. Certificate returned.

182. *Argo*, wood ; built at North Hylton, Durham, in 1875 ; owned by Mr. R. Humble, of Sunderland ; tonnage 631 ; London to Sunderland ; ballast ; stranded near Blyth, on November 26, 1877. Inquiry held at South Shields, December 15, 1877, before Yorke, Stip. Mag. Aplin and Castle, N.A. Master in default for running into the land in a dense fog, and also for leaving the deck in charge of an unqualified person. Certificate suspended for six months ; but mate's certificate recommended during that period.

183. *Argo*, wood ; built at Yarmouth, Nova Scotia, in 1863 ; owned by Messrs. De Wolf, of Liverpool ; New York to Rotterdam ; petroleum ; lost at Berck-sur-Mer, north of the River Somme, November 22, 1877. Inquiry held at Liverpool, December 24, 1877, before Raffles, Stip. Mag. Grant and Jones, N.A. Master in default for not accurately ascertaining his position on passing the Start Light, and for not more frequently using the lead. Certificate suspended for six months.

185. *Crusader*, wood; built at Portsmouth, U.S., in 1850; owned by J. L. McLay and others, of Liverpool; tonnage 991; Quebec to South Shields; timber; lost on the Goodwin Sands, December 1, 1877. Inquiry held at Liverpool, December 21, 1877, before Raffles, Stip. Mag. Grant and Jones, N.A. Loss attributed to master's neglect in not verifying his position by taking cross bearings. Certificate suspended for six months. The Court observed that masters of vessels should always be provided with the latest charts and sailing directions. In this case the chart used was very old, and on a small scale.

186. *Westella*, s.s., iron; built at Sunderland in 1872; owned by Mr. S. B. Jackson and others, of Hull; tonnage 1,037; Gefle to London; iron and deal; stranded on the Nore Sand, November 30, 1877. Inquiry held at Westminster, December 28, 1877, before Rothery, Wreck Commissioner. Powell and Parfitt, N.A. Master to blame for recklessly navigating his vessel at full speed up the river on a dark night, and without a pilot. Certificate suspended for three months; but Court recommend that chief mate's certificate be granted during that period.

188. *European*, s.s., iron; built at Govan, Lanark, in 1869; owned by the Union Steamship Company; tonnage, 2,271; Cape of Good Hope to Plymouth; general cargo, passengers, and mails; lost on the Basse Meur Rock, off Ushant, December 5, 1877. Inquiry held at Westminster, December 21, 1877, before Rothery, Wreck Commissioner. Aplin and Nicolas, N.A. Master guilty of gross and culpable negligence, in having proceeded at full speed whilst very uncertain as to his true position. Certificate suspended for six months. The Court observed that, although no charge was made against the chief officer, he did not give that efficient aid to the master which might have been expected.

190. *Henry M. Hine*, wood; built at Colchester, U.S., in 1876; owned by Mr. F. Jones, of Milford; tonnage, 140 and 63; Swansea to Honfleur; coals; stranded and lost at Treport, November 23, 1877. Inquiry held at Swansea, December 19, 1877, before Fowler, Stip. Mag. Hight and Visconti, N.A. Master exonerated. Certificate returned.

191. *Ennismore*, s.s. ; built at Port Glasgow 1873 ; owned by Mr. Thomas Hamilton, Glasgow ; tonnage, 190 ; Dublin to Whitehaven ; ballast ; stranded 12 miles south of St. Bees Head, December 10, 1877. Inquiry held at Whitehaven, January 7, 1878, before Fisher and Bain, J.P. Powell and Wilson, N.A. Master and mate guilty of negligent navigation. Certificates suspended for three months.

195. *Northumbria*, barque, iron ; built at West Hartlepool in 1865 ; owned by Mr. P. Hick, of Scarborough, and others ; tonnage, 600 ; Montreal to Queenstown ; wheat ; lost on Anticosti Island, November 6, 1877. Inquiry held at Liverpool, January 7, 1878, before Raffles, Stip. Mag. Knox and Nicolas, N.A. Master guilty of negligent navigation. Certificate suspended for three months.

197. *Frankfort*, s.s. ; built at Port Glasgow in 1851 ; owned by Peter McGuffie and others, Liverpool ; tonnage, 413 ; Liverpool for Christiania ; coals and general merchandise ; stranded on Barra Island, N.B., December 6, 1877. Inquiry held at Liverpool January 4, 1878, before Raffles, Stip. Mag. Knox and Nicolas, N.A. Casualty caused by great severity of gale. Master's certificate returned.

OFFICIAL INQUIRIES ABROAD.

Stanley Castle, barque ; London ; lost on the Coconada Coast on May 31, 1877. Inquiry held at Coconada. Master exonerated from blame.

Cheops, s.s. ; lost off Vingorla, August 4, 1877. Inquiry held at Bombay, September 14, 1877. Master guilty of great carelessness in approaching so near the coast. Severely censured.

Australia, s.s. ; damage to one of the boilers. Inquiry held at Sydney, September 17, 1877. Engineer in charge severely censured for omitting to order the fires to be drawn without a moment's delay.

Mecca, s.s., of British India Steam Navigation Company ; stranded on the Krishna Shoal, on September 15, 1877. Inquiry held at

Rangoon, September 17, 1877. Master misled by soundings given to him by second officer; evidence not sufficient to convict second officer of default.

Lord Ashley, s.s.; Sydney; lost, Terrigal Boat Harbour, September 8, 1877. Inquiry held at Sydney, September 24, 1877. Casualty due to ship making water, and to her being steered for shore before becoming helpless. No evidence to found charge against master or officers.

County of Berwick; ship lost on Sangor Sands, mouth of river Hooghly, when in charge of a pilot, on September 14, 1877. Inquiry held at Calcutta, October 2, 1877. Casualty due to gross carelessness and negligence of duty on the part of the pilot. Dismissed from the service.

Julie Reitz, ship; Newcastle (N.S.W.); lost on a reef not marked on chart, in lat. $5^{\circ} 12' S.$, and long. $123^{\circ} 33' E.$ Inquiry held at Sourabaya, October 8, 1877. Master's certificate returned.

Ardent, barque; grounded at Chandbally, mouth of Dhamra River, September 2, 1877. Inquiry held at Chandbally, October 4, 1877. Master exonerated.

Caroline, ketch; Sydney; lost in Charlotte Bay on the 24th September, 1877. Inquiry held at Sydney, October 9, 1877. Casualty due to an error of judgment on the part of the master in attempting to work his vessel into an anchorage under the canvas he did. Reprimanded and cautioned to be more careful in future.

Glen Albyn, three-masted schooner; Hull; lost at Huon island, New Caledonia, on September 6, 1877. Inquiry held at Sydney, October 15, 1877. Locality unsurveyed. Master exonerated.

Merse, barque; London; lost on the Pratas Shoal on Oct. 11, 1877. Inquiry held at Hong Kong, Oct. 23, 1877. Casualty due to an error of judgment on the part of the master in trying to pass too close to windward of a dangerous reef. Not deemed necessary to suspend his certificate.

Othello, ship; lost on the Krishna Shoal, near Rangoon, Oct. 7, 1877. Inquiry held at Rangoon, Oct. 28, 1877. Casualty due

to disappearance of Krishna Shoal lighthouse. Master exonerated from all blame.

Assyrian, barque ; put into Algoa Bay leaky. Inquiry held at Port Elizabeth, October 18, 1877. Master exercised a sound discretion. Certificate returned.

Mabel, barque ; Liverpool ; lost at Durban. Inquiry held at Durban, October 31, 1877. Master (also owner) drowned. Loss of vessel due to (1) her unseaworthy condition, and (2) bad and insufficient cables.

Petrel, barque, of Liverpool ; lost near the Port of Victoria, Espirito Santo, Brazil ; Naval Court held on November 27, 1877. Loss due to want of discretion and neglect on the part of the master in not awaiting daylight before approaching the port. Certificate suspended for twelve months.

Glenbrook, brig ; lost on the Island of Cuba. Naval Court held at Havanna, November 28, 1877. Casualty due to neglect of master in not using the log or the lead. Master reprimanded.

Hampden, of Glasgow ; cargo of coals ; caught fire and abandoned in Indian Ocean, September 20, 1877. Inquiry held at Mauritius. Casualty supposed to have occurred through spontaneous combustion. Master did not exercise the energy which might have been expected ; but certificate was returned.

MERCHANT SEAMEN BILL, 1878.

[Just as we are going to press, we have obtained a copy of the new Merchant Seamen Bill, which we hasten to publish. We have no space for any remarks in this number, but hope to deal with the subject next month.—ED.]

A BILL TO AMEND THE LAW RELATING TO MERCHANT SEAMEN.
BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

PRELIMINARY.

1. *Short title.*—This Act may be cited as the Merchant Seamen Act, 1878.

2. *Construction of Act.*—This Act shall be construed as one with the Merchant Shipping Act, 1854, and the Acts amending the same; and the said Acts and this Act may be cited collectively as the Merchant Shipping Acts, 1854 to 1878.

3. *Commencement of Act.*—This Act shall come into operation on the first day of January, One thousand eight hundred and seventy-nine, which day is in this Act referred to as the commencement of this Act.

EXTENSION TO SEAMEN OF EMPLOYERS AND WORKMEN ACT AND CONSPIRACY AND PROTECTION OF PROPERTY ACT.

4. *Application of 38 & 39 Vict., cc. 86 and 90, to seamen before he joins ship or begins work.* See 17 & 18 Vict., c. 104, s. 243.—Until a seamen or apprentice to the sea service engaged in the United Kingdom has joined his ship, or begun work in pursuance of his engagement, the Employers and Workmen Act, 1875, and the Conspiracy and Protection of Property Act, 1875, shall apply to him as if he were a workman or apprentice within the meaning of those Acts respectively.

FRAUD.

5. *Penalty for absconding with wages.*—Where a seaman or apprentice to the sea service has received money on account of wages payable under an agreement, and, before repayment thereof, wilfully and without reasonable cause refuses or neglects to perform the agreement in respect of which the money was paid, he shall be liable on summary conviction to be imprisoned for any period not exceeding six weeks, with or without hard labour.

DISCIPLINE.

6. *Desertion and absence without leave after seaman joins his ship.* See 11 W. 3, c. 7, s. 17; 17 & 18 Vict., c. 104, s. 243.—If a seaman or apprentice to the sea service after having joined his ship or begun work, and before the arrival of the ship at the port at which his engagement is to end, deserts from his ship or is absent without leave and without sufficient reason from his ship or his duty, he shall be liable, on summary conviction, to be im-

prisoned for any period not exceeding *six weeks*, with or without hard labour, and, at the discretion of the Court, either in addition to or in substitution for such imprisonment,—

- (1.) In case of desertion, to forfeit all or any part of the effects he leaves on board, and of the wages which he has then earned, and also, if the desertion takes place out of the United Kingdom, both to forfeit all or any part of the wages he earns in any other ship in which he is employed until his next return to the United Kingdom, and to satisfy any excess of wages paid to any substitute engaged in his place at a higher rate of wages than the rate stipulated to be paid to him; and
- (2.) In case of absence without leave, and without sufficient reason, to forfeit out of his wages a sum not exceeding the amount of *ten days'* pay with the addition of *six days'* pay for every twenty-four hours of such absence or not exceeding the expenses properly incurred in hiring a substitute, whichever is highest.

In a proceeding against a seaman or apprentice for the offence of desertion, or of absence without leave and without sufficient reason, he may, if he thinks fit, be sworn and examined as an ordinary witness in the case.

7. *Arrest of seaman deserting or absent without leave after he joins his ship.* 17 & 18 Vict., c. 104, s. 246.—If a seaman or apprentice to the sea service, after having joined his ship or begun work, and before the arrival of the ship at the port at which his engagement is to end, deserts from his ship, or is absent without leave and without sufficient reason from his ship or his duty, any person being the master, or a mate, owner, ship's husband, or consignee of the ship to which the offender belongs, may arrest the offender, without warrant, at any place in Her Majesty's dominions, and also at any place out of Her Majesty's dominions if and so far as the law in force at that place permits, and every constable shall give to the person making the arrest such assistance as he may require.

Provided that the power of arrest without warrant conferred by this section shall not be exercised at any port in Her Majesty's dominions where the voyage on which the seaman or apprentice

is bound to serve begins, except after the ship has finally cleared outwards for the voyage, or has left her final port of departure for the voyage, whichever first happens.

The person arresting the offender may, and if the offender so requires and it is practicable, shall, convey him before some court capable of taking cognizance of the offence, and for that purpose may detain him in custody for such period not exceeding *twenty-four* hours as may be necessary.

He may also, if the offender does not require to be taken before the court, or if there is no such court at or near the place, at once convey the offender on board his ship.

If any such arrest appears to the court to have been made on improper and insufficient grounds, the person who makes the same or causes the same to be made shall be liable, on summary conviction, to a fine not exceeding *twenty pounds*, to be paid to the person arrested, if he accepts the same, but the acceptance of that fine shall be a bar to any other proceeding for damages in respect of the arrest.

8. *Neglect or refusal of seaman engaged out of the United Kingdom to join ship.* See 17 and 18 Vict., c. 104, s. 243.—Where a seaman or apprentice to the sea service, engaged elsewhere than in the United Kingdom, neglects or refuses, without reasonable cause to join his ship, or begin work in pursuance of his engagement, he shall be deemed to be absent without leave and without sufficient reason from his ship within the meaning of this Act, and all the provisions of this Act shall apply as if he had been so absent after he had joined his ship or begun work.

Her Majesty in Council, when satisfied that reasonable provision has been made by law in the British possession for the speedy settlement of disputes between the owner or master of a ship and a seaman or apprentice to the sea service before such seaman or apprentice joins his ship or begins work in pursuance of his engagement, may order that this section shall not apply to seamen or apprentices engaged in that possession, or shall apply to them only subject to the exceptions and modifications contained in the Order.

8. *Power for seaman charged with desertion, &c., to demand survey of ship.* 89 & 40 Vict., c. 80. See 34 & 35 Vict., c. 110, s. 7;

36 & 37 Vict., c. 85, s. 9; 17 & 18 Vict., c. 104.—If in a proceeding against a seaman or apprentice belonging to a ship for desertion or absence without leave and without sufficient reason, he alleges that the ship is unsafe within the meaning of the Merchant Shipping Act, 1876, or that her accommodation is insufficient, the following provisions shall have effect :

- (1.) The Court having cognizance of the case shall take such means as may be in their power to satisfy themselves concerning the truth or untruth of the allegation :
- (2.) If the court are satisfied that the allegation is groundless, they shall proceed to adjudicate.
- (3.) If the court are not so satisfied, they shall require one of the surveyors appointed by the Board of Trade under the Merchant Shipping Act, 1854, or some person appointed for the purpose of this section by the Board of Trade, or, if such surveyor or person cannot be obtained without unreasonable expense or delay, or is not, in the opinion of the court, competent to deal with the special circumstances of the case, then some impartial surveyor appointed by the Court, and having no interest in the ship, her freight or cargo, to survey the ship and to answer any question concerning her which the Court may think fit to put.
- (4.) The surveyor or other person so appointed shall survey the ship, and make his report in writing to the Court, including an answer to every question put to him by the Court.
- (5.) The Court shall cause the report to be communicated to the parties, and, unless it be proved to the satisfaction of the Court that the opinions expressed in the report are erroneous, the Court shall determine the questions before them in accordance with those opinions.
- (6.) For the purposes of the survey, the surveyor or person appointed to make the survey shall have all the powers of an inspector appointed by the Board of Trade under the Merchant Shipping Act, 1854.
- (7.) The costs, if any, of the survey shall be determined by the Board of Trade according to the scale of fees to be

fixed by them, and shall be paid in the first instance out of the Mercantile Marine Fund.

- (8.) If it is proved to the satisfaction of the Court either that the ship is unsafe, or that her accommodation is insufficient, the costs of the survey shall be paid to the Board of Trade by the master or owner; and the master or owner shall be liable to pay to the seamen or apprentice such compensation for his detention (if any) as the Court may award.
- (9.) If it is not proved to the satisfaction of the Court either that the ship is unsafe, or, that her accommodation is insufficient, the costs of the survey shall be paid by the seaman or apprentice to the Board of Trade, and shall, if required by the Board of Trade, be deducted by the master or owner out of the wages due or to become due to him, and be paid over to the Board of Trade.
- (10.) If any person falsely and maliciously, and without reasonable and probable cause, makes any such allegation as in this section mentioned, he shall be liable on summary conviction to imprisonment for any period not exceeding *one month*, with or without hard labour.

10. *Leaving ship after arrival at port at which engagement ends.* 17 & 18 Vict., c. 104, s. 243.—If a seaman or apprentice to the sea service quits his ship without leave and without sufficient reason, after her arrival at the port at which his engagement is to end, and before the time fixed for the end of his engagement, or, if no time is fixed, before the ship is safely moored in her berth, he shall be liable, on summary conviction, to forfeit out of his wages a sum not exceeding *one month's* pay.

11. *Misconduct endangering ship or life or limb.* 17 & 18 Vict., c. 104, s. 289.—A master of, or a seaman or apprentice belonging to a British ship, who, by wilful breach of duty, or by neglect of duty, or by reason of drunkenness, either—

- (1.) Does any act tending to the immediate loss, destruction, or serious damage of the ship, or tending immediately to endanger the life or limb of any person belonging to or on board the ship; or

- (2.) Refuses or omits to do any lawful act proper and requisite to be done by him for preserving the ship from immediate loss, destruction, or serious damage, or for preserving any person belonging to or on board the ship from immediate danger to life or limb,

shall for every such offence be guilty of a misdemeanor.

12. *Mutiny.* See 11 Will. 3, c. 7, s. 8; 7 Will. 4, & 1 Vict., c. 88, s. 7; 17 & 18 Vict., c. 104, s. 243; 20 & 21 Vict., c. 3; 27 & 28 Vict., c. 47.—A seaman or apprentice to the sea service belonging to a ship who commits mutiny, that is to say,

- (1.) Unlawfully takes the ship out of the authority of the master, or conspires or unlawfully endeavours to take the ship out of the authority of the master; or
- (2.) Unlawfully confines the master or an officer of the ship when on the high seas, or conspires or unlawfully endeavours to confine him; or
- (3.) Makes or conspires or endeavours to make a revolt on board the ship when on the high seas; or
- (4.) After he joins the ship or begins work in pursuance of his engagement combines with any of the crew to disobey lawful commands, or to neglect duty, or to impede the navigation of the ship or the progress of the voyage,

shall be guilty of felony, and shall for each offence be liable to be kept in penal servitude for life, or for any term not less than the minimum term allowed by law, or to be imprisoned for any term not exceeding *two years*, with or without hard labour.

17 & 18 Vict., c. 104, s. 243.—A seaman or apprentice who commits any of the offences mentioned in this section may also be prosecuted for the same before and be convicted thereof by a Court of summary jurisdiction, and on such conviction shall be liable to be imprisoned for any period not exceeding *three months*, with or without hard labour, and, at the discretion of the Court, either in addition to or in substitution for such imprisonment, to forfeit all or any part of the wages due to him.

Provided that no person shall under this section be punished twice for the same offence.

13. *Assault on officer.*—17 & 18 Vict., c. 104, s. 243. A seaman

or apprentice to the sea service who assaults an officer of his ship shall be liable, on summary conviction, to be imprisoned for any period not exceeding *three months*, with or without hard labour, and, at the discretion of the Court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding *one month's* pay.

14. *Insubordination, breach of discipline, and negligence*, 17 & 18 Vict., c. 104, s. 343.—A seaman or apprentice to the sea service who after joining his ship or beginning work in pursuance of his engagement is—

- (a.) Guilty of wilful disobedience to any lawful command; or
- (b.) Drunk when on duty; or
- (c.) Guilty of gross carelessness or wilful neglect in the discharge of his duty; or
- (d.) Guilty of any other act of insubordination or gross breach of discipline,

shall be liable on summary conviction to be imprisoned for any period not exceeding *three months*, with or without hard labour, and, at the discretion of the Court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding *one month's* pay.

If the offence is continued, he shall be liable to be imprisoned for any period not exceeding *three months*, with or without hard labour, and, at the discretion of the Court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding *six days'* pay for every twenty-four hours continuance of the offence, or not exceeding the expenses properly incurred in hiring a substitute, whichever is highest.

15. *Neglect of duty to keep look-out*.—It is hereby declared to be the duty of every master of a ship to provide for a proper look-out being duly placed, kept, and relieved, and to be the duty of every officer in charge of the deck to see that a proper look-out is kept whilst he is so in charge.

A master or officer who makes default in performance of this duty shall be liable, on summary conviction, to be imprisoned for any period not exceeding *three months* with or without hard labour, and also, at the discretion of the Court, either in addition

to or in substitution for such imprisonment, to pay a penalty not exceeding *fifty pounds*, and, if he is a certificated officer, to have his certificate cancelled.

A seaman or apprentice to the sea service who, when on duty on the look-out, is drunk or asleep, or otherwise neglects to keep the look-out, shall be liable, on summary conviction, to be imprisoned for any period not exceeding *two months*, with or without hard labour, and at the discretion of the court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding *one month's* pay.

THEFTS AND INJURIES TO PROPERTY.

16. *Broaching and embezzlement of stores or cargo.* See 17 & 18 Vict., c. 104, s. 243; 24 & 25 Vict., c. 96, s. 63.—A seaman or apprentice to the sea service who embezzles or steals any stores or cargo on board his ship, or any property belonging to any of the crew or passengers, or other persons on board the ship, or, with intent to embezzle or steal, breaks any part of the ship, or breaks or opens any package vessel or receptacle therein, shall be guilty of felony, and shall on conviction be liable at the discretion of the Court to be kept in penal servitude for a term not exceeding *fourteen years*, and not less than the minimum term allowed by law, or to be imprisoned for any term not exceeding *two years* with or without hard labour.

A seaman or apprentice who commits any of the offences mentioned in this section may also be prosecuted for the same before, and convicted thereof by, a Court of summary jurisdiction, and on such conviction shall be liable to be imprisoned for a period not exceeding *three months*, with or without hard labour, and at the discretion of the Court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding the damage caused by the offence.

Provided that a person shall not under this section be punished twice for the same offence.

17. *Wilful damage to ship or cargo.* 17 & 18 Vict., c. 104, s. 243. See 24 & 25 Vict., c. 97, s. 45.—A seaman or apprentice to the sea service who wilfully or by gross negligence damages his ship or her tackle, apparel, or equipments, or any of her stores or

cargo, or any property belonging to any of the crew or passengers, or other persons on board the ship, shall be liable, on summary conviction, to be imprisoned for any period not exceeding *three months*, with or without hard labour, and, at the discretion of the Court, either in addition to or in substitution for such imprisonment, to forfeit out of his wages a sum not exceeding the damage caused by the offence.

RESCINDING OF CONTRACT.

18. *Power of Court to rescind contract between master and seaman or apprentice.* See 38 & 39 Vict., c. 90, s. 3.—Where a proceeding is instituted in any Court in relation to any dispute between an owner or master of a ship and a seaman or apprentice to the sea service, arising out of or incidental to their relation as such, or is instituted for the purpose of this section, the Court, if having regard to all the circumstances of the case, they think it just so to do, may rescind any contract between the owner or master and the seaman or apprentice, or any contract of apprenticeship, upon such terms as the Court think just, and this power shall be in addition to any other jurisdiction which the Court can exercise independently of this section.

WAGES.

19. *Time of payment and effect of non-payment of wages.* See 17 & 18 Vict., c. 104, s. 187.—A seaman's wages shall be payable when he lawfully leaves the ship at the end of his engagement, and until they are paid the seaman shall continue entitled to receive the same wages as if the engagement were not ended.

Provided that where—

- (1.) The seaman quits his ship without leave and without sufficient reason after her arrival at the port at which his engagement is to end, and before the time fixed for the end of his engagement, or, if no time is fixed, before the ship is safely moored in her berth ; or,
- (2.) Any delay in such payment arises from the default of the seaman, or from a reasonable dispute as to liability on the part of the owner or master of the ship :

the seaman shall not be entitled to receive any wages in respect of any time after the date of such quitting the ship, default, or dis-

pute (as the case may be), and that date in case of difference shall be determined by the Court having cognizance of the case.

20. *Part payment on account of wages.* 17 & 18 Vict., c. 104, s. 187.—When a seaman lawfully leaves his ship at the end of his engagement, the owner or master of the ship shall pay him on account of his wages either *one-fourth* of the wages due or *two pounds*, whichever is least; and if he fails without reasonable cause to make this payment when requested by the seaman, shall be liable to pay to the seaman, in addition to any other wages due to him, a sum not exceeding the amount of *two days'* pay for each of the days, not exceeding *ten* days during which the payment is delayed, and this sum shall be recoverable as wages.

21. *Delivery by master of account of wages and deductions.* 17 & 18 Vict., c. 104, s. 171.—Every master shall, before a seaman lawfully leaves his ship at the end of his engagement, deliver to him a full and true account, in a form sanctioned by the Board of Trade, of his wages and of all deductions to be made therefrom on any account whatever, and in default shall for each offence be liable on summary conviction to a penalty not exceeding *five pounds*.

A deduction from the wages of a seaman which is not included in the said account shall not be allowed, except in respect of a matter happening after the delivery of the account, or in respect of a payment made under an allotment note.

Every master shall during the voyage enter every matter in respect of which a deduction from wages is made, with the amount of each deduction as and when made, in a book kept for that purpose, and shall, if required, produce that book at the time of the payment of wages, and also upon the hearing before any competent authority of any complaint or question relating to any such deduction or to the payment of wages.

22. *Settlement of wages.* See 17 & 18 Vict., c. 104, s. 175.—Where a seaman is discharged, at the end of his engagement before a superintendent of a Mercantile Marine Office, the following rules shall be observed; (that is to say,)

- (1.) The seaman shall, when the settlement of his wages is completed, sign, in the presence of the superintendent, a release, in the form prescribed by the Board of Trade,

of all claims relating to wages in respect of the said engagement; and the master or owner of the ship shall also sign the same, and the superintendent shall also sign and attest it :

- (2.) The release so signed and attested shall operate as a mutual discharge and settlement of all demands between the parties thereto in respect of the said engagement so far as they relate to wages or forfeitures of or deductions from wages :
- (3.) A certified copy of the release or of any part thereof shall be given by the superintendent who signs it, or by the Registrar-General of Shipping and Seamen, to any person requiring the same, and a copy purporting to be so certified shall be receivable in evidence as if it were the original :
- (4.) If the seaman at the time of his discharge before the superintendent agrees by an agreement made in the form prescribed by the Board of Trade, and signed by him in the presence of the superintendent, to accept a portion of his wages, and to have the residue deposited with the superintendent, then, on the residue being deposited in accordance with the agreement, the wages shall be deemed to have been paid at the date of the agreement :
- (5.) The receipt of the superintendent for the residue so deposited shall be a full discharge on behalf of the seaman to the person depositing it :
- (6.) If at the date fixed for the discharge the seaman is absent, or is not in a fit condition to sign the release, the master or owner may deposit with the superintendent the amount alleged by him to be due to the seaman for wages, and the sum so deposited shall be payment to the seaman of that amount of wages, and if a larger amount is due, the delay in payment of the residue shall be deemed to have arisen from the default of the seaman :
- (7.) The superintendent shall pay or remit a sum deposited with him under this section in such manner as the seaman directs :

- (8.) Where the sum was deposited in consequence of the seaman being absent or not being in a fit condition to sign the release, his directions for the payment or remitter of the sum shall be deemed to be equivalent to the signing of the release :
- (9.) Where a discharge or settlement of wages before a superintendent of a Mercantile Marine Office is required by the Merchant Shipping Act, 1854, and the Acts amending the same, any payment, receipt, settlement, or discharge, otherwise made shall not operate as, nor be admitted as evidence of, a release or satisfaction of any claim relating to wages :
- (10.) Upon a sum being paid before or deposited with a superintendent by a master, the superintendent shall, if required, sign and give to the master a statement of the whole sum so paid or deposited ; and that statement shall, as between the master and his employer, be received as evidence that he has paid or deposited the sum therein mentioned :
- (11.) Where a question as to wages is raised before the superintendent between a master or owner of a ship and a seaman or apprentice, if the amount in dispute does not exceed *five pounds*, the decision of the superintendent in the matter shall be final ; but if the superintendent is of opinion that the question is one which ought to be decided by a court of law, he may refuse to decide it.

MISCELLANEOUS AND REPEAL.

23. *Application of 17 & 18 Vic., c. 104, s. 244, to offences under Act.*—Section two hundred and forty-four of the Merchant Shipping Act, 1854 (which relates to the entry in the official log-book of the offences enumerated in section two hundred and forty-three hereby repealed of that Act), shall extend to all offences under this Act.

24. *Cancellation of entries in official log as to offences.* See 17 and 18 Vict., c. 104, ss. 244, 282.—Where a master of a ship has in consequence of an offence committed by a member of his crew

made an entry in the official log-book as to the offence, or as to the conduct, character, or qualifications of the offender, he may, if in his judgment the subsequent conduct of the offender during the voyage is such as to condone the offence, cancel the entry.

Where an entry is so cancelled the master shall enter in the official log-book a memorandum explaining the reasons for the cancellation, and this memorandum shall be signed by the master and by the mate, or some other member of the crew, and if the offender wishes, also by him.

25. *Liability of seamen for loss to owner caused by smuggling.* 17 & 18 Vic., c. 104, s. 243.—If a seaman or apprentice to the sea service commits any act of smuggling contrary to the laws of the United Kingdom or of any British possession or foreign country, whereby a fine or penalty is imposed on, or loss or damage is occasioned to the master or owner of his ship, he shall be liable to forfeit out of his wages such a sum as is sufficient to reimburse the master or owner for the fine, penalty, loss, or damage.

26. *Person not to go on board ship without permission before seamen leave.* See 17 & 18 Vict., c. 104, s. 237.—When a ship is about to arrive, or has arrived, at the end of her voyage, every person, not being in Her Majesty's service, or not being duly authorised by law for the purpose, who goes on board such ship, without the permission of the master, before the seamen lawfully leave the ship at the end of their engagement, shall, for every such offence, be liable on summary conviction to a penalty not exceeding *twenty pounds*; and the master of the ship may take such person into custody, and deliver him up forthwith to a constable to be taken before a Court or magistrate capable of taking cognisance of the offence, and dealt with according to law.

27. *Application of provisions of Act.* See 17 & 18 Vict., c. 104, s. 109.—The provisions of this Act, unless the context requires a different application, shall apply to the ships and to the owners, masters and crews of the ships to which or to whom they would apply if they were enacted in Part III. of the Merchant Shipping Act, 1854.

28. *Legal proceedings in case of offences.*—For the purpose of punishment, jurisdiction, and legal proceedings, an offence under

this Act shall be deemed to be an offence under the Merchant Shipping Act, 1854.

29. *Definitions.*—In this Act, unless the context otherwise requires—

The expression “wages” includes emoluments.

The expression “court” includes any magistrate or justice having jurisdiction in the matter with respect to which the expression is used.

30. *Saving for other Proceedings.*—A proceeding or conviction for any act, neglect or default for which any person is made punishable under this Act shall not affect any civil remedy to which a person aggrieved by the act, neglect or default may be entitled.

Nothing in this Act shall exempt a person from a proceeding for an offence which is punishable at common law or under any Act of Parliament other than this Act, so that no person be punished twice for the same offence.

Where a proceeding is taken before a Court against any person for an offence punishable under this Act, the Court may direct that instead of such proceedings being continued, proceedings shall be taken for punishing such person at common law or under some Act of Parliament other than this Act, or for punishing such person with any other punishment to which he may be liable under this Act.

31. *Repeal.*—The Acts specified in the schedule to this Act are hereby repealed from and after the commencement of this Act, to the extent specified in the third column of that schedule.

Provided that—

(1.) This repeal shall not affect—

(a.) Anything duly done or suffered before the commencement of this Act under any enactment hereby repealed; or

(b.) Any right acquired or liability incurred under any enactment hereby repealed; or

(c.) Any penalty, forfeiture, or other punishment incurred or to be incurred in respect of any offence committed before the commencement of this Act against any enactment hereby repealed; or

- (d.) The institution or prosecution to its termination of any legal proceeding or remedy for ascertaining, enforcing, or recovering any such right, liability, penalty, forfeiture, or punishment as aforesaid ; and
- (2.) An unrepealed enactment referring to any provisions of an enactment hereby repealed shall be construed as if it referred to the corresponding provisions of this Act.

SCHEDULE.

ENACTMENTS REPEALED.

Note.—A description or citation in this schedule of a portion of an Act is inclusive of the word section or other part first or last mentioned, or otherwise referred to as forming the beginning or as forming the end of the portion described in the description or citation.

Session and Chapter.	Title.	Extent of Repeal.
11 Will. 3, c. 7. - -	An Act for the more effectual suppression of piracy.	Section 8 from "or if any person shall lay violent hands," down to "make a revolt in the ship." Section 17.
17 & 18 Vict., c. 104 -	The Merchant Shipping Act, 1854.	Sections 171, 175, 187, 237, 239, 243, and 246.
25 & 26 Vict., c. 63 -	The Merchant Shipping Act Amendment Act, 1862.	Section 7 from "and shall be carried" to the end of the Section.
34 & 35 Vict., c. 110 -	The Merchant Shipping Act, 1871.	Section 7.
36 & 37 Vict., c. 85 -	The Merchant Shipping Act, 1873.	Section 9.
38 & 39 Vict., c. 86 -	Conspiracy and Protection of Property Act, 1875.	So much of Section 16 as is inconsistent with this Act.
38 & 39 Vict., c. 93 -	The Employers and Workmen Act, 1875.	So much of Section 13 as is inconsistent with this Act.

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SHIPPING LEGISLATION.—MERCHANT SEAMEN
BILL, 1878.

IN our last we reprinted, for the information of our readers, the full text of the Merchant Seamen Bill, introduced into Parliament by the Right Honourable Sir Charles Adderley, President of the Board of Trade.

The right hon. gentleman in a very clear and moderate speech explained the objects and scope of the Bill, as being the improvement of the condition of seamen, and the strengthening of the hands of the master and officers in the maintenance of discipline on board. The Hon. E. Stanhope, later on in the short debate which followed the introduction of the Bill, announced the intention of the Government to refer it to a Select Committee. If this intention is acted on at a reasonably early day, and if the Select Committee is chosen with a view to the fitness of the members who are to form it, good results may be anticipated. A curious feature of Select Committees is that the members are often selected not on account of their special knowledge or fitness, but are so chosen that each Conservative shall be confronted by a Liberal, and

thus the fittest of men,—that is to say, those best acquainted with the details of a particular subject and least likely to place self-interest or self-conceit before broad principles,—are kept out, to serve in their turn, perhaps, on some other Committee, where their main use is to confront an hon. member of the opposite political persuasion. It would, indeed, be a remarkable circumstance if Mr. Plimsoll were on the Committee, while two shipowners who have been the special objects of his animadversions, we allude to Mr. Norwood and Mr. Bates, were not upon it.

Amongst the advantages likely to accrue from the early introduction of this Bill, not the least will be that members will have the whole session before them to expound and urge their varying views. Mr. Burt, Mr. Macdonald and Mr. Cowen (with Mr. Gorst, who, though a Conservative, has always been ready to block the ball of Sir Charles Adderley) will have ample opportunities to submit their proposals as to the application of the Employers and Workmen Act to seamen, and the grounds on which they think it has been of benefit to those persons who already come within its provisions. Mr. Plimsoll will be able to bring forward once again the sentimental and poetic side of the question; Mr. Eustace Smith, Mr. Norwood, Mr. David MacÍver, Mr. Rathbone, and others of our well-known shipowners will be able to give abundance of practical information and advice; while Mr. Brassey and Lord Eslington, partly as shareholders in shipping, but chiefly as thinkers, expositors and elaborators, will no doubt help towards bringing the Bill to perfection. Before the Select Committee, the advocates of creed and dogma as a direct means of ensuring seaworthiness in seamen, will be enabled to urge their arguments; while Lord Shaftesbury and the Reverend Mr. Boyer, of Portishead, the latter of whom was so warmly eulogized in Sir Charles Adderley's opening speech, will be able to submit their views as regards the moral condition of seamen, and the evils of crimps and the advance-note system. We may also expect that Mr. Bates will not fail to "improve the occasion," of which let us hope he will not be slow to avail himself, for unsaying and undoing much of his advocacy of the advance-note system.

The Bill is a Merchant Seamen Bill, and therefore does not in any

way deal with ships, except that it incidentally makes unseaworthiness or insufficient accommodation a justification for desertion. The shipping legislation of the past session is working tolerably well, and may reasonably be left in peace: the system of inquiries is successfully developing under the able management of the Wreck Commissioner and the solicitor of the Board of Trade, and is proving that what we have always said as to their value is correct. Owners are beginning to find that it is far easier for them to comply with regulations as to surveys, than it is to prove that a ship is seaworthy. Where a steamship has been surveyed and certified by a public officer, the Court has over and over again absolved the owners from consequences arising from breakdowns or structural failures, but where no such preliminary survey has been made, and no certificate obtained, the like absolution has not followed. From the public standpoint, and although not one in fifty of our readers will probably agree with us, we say it is more likely to lead to improvement, and it is therefore better for a Court to adjudge, for instance, that the fitting or arrangement of valves, or of sounding pipes, or of shifting boards in a ship, has contributed to the loss of a ship, than it is for the Board of Trade to absolve from responsibility all persons who comply with such regulations, if any, as they may issue thereupon. From the shipowners' standpoint the case is very different, and we can understand that they would rather be desirous at the outset of complying with almost any regulations issued by authority, as the expense of compliance is far more than recouped by the security conveyed to them by the Government certificate. We must not however pursue this subject any further just now, but take up the Seamen Bill, which as we said before has nothing to do with ships.

There are certain parts of the Bill that need occupy but little time; we refer especially to those sections which formed part of the abandoned Bill of 1875, and which were then passed after exhaustive and lengthy discussion in Committee of the whole House; but other clauses will form a fair battle-ground for all sorts of questions, social, moral, aesthetic, religious, political, and economical.

The whole system affecting the relations between owners and

seamen, that is to say between employer and workman, starts with the establishment of Mercantile Marine Offices or Shipping Offices, as they were first called under the Mercantile Marine Act of 1850, and we have received communications raising the question "whether a Merchant Seamen Bill, which places sailors in the position of workmen ashore ought not to begin by abolishing those offices," and, moreover, we hear from certain of our correspondents "that some associations or societies are about to bring that view forward very strongly before the Select Committee this session." Their views appear to be based on the assumption that no evil has resulted from the absence of the attendance at Mercantile Marine Offices of the crews of home-trade ships; and that the time has arrived when the British workman who earns wages by service on board ship should take care of himself and look after his interests just as the British workman who earns his living by wages or by strike money, in, or by his absence from, a workshop ashore. We cannot say whether the shipowner now regards the engagement or discharge at the Mercantile Marine Office as of any benefit to himself, to the ship, or to the venture. It appears to us that those who object to Mercantile Marine Offices have at the present time the "ear of the House," and it is just possible, later on, that there may be abundance of shipowners and seamen who will stand up for the continuance of those offices. However that may be, it is certain that by a general "disestablishment" of them throughout the country, fees would be saved, and the seaman would, at the beginning of each voyage, be the richer by one shilling, which he could save against a rainy day if he chose; but which in all probability he would rather distribute between the exchequer and the crimp: through the agency of the dealer in alcohol.

"Am I not a man and a brudder," used to be the imaginary question of the ideal negro of our childhood, and much the same sense in other words is the imaginary question of the ideal seaman of to-day. Put in other words, the question would run—Are seamen to be deemed to be "infants," or "innocents," or "incapables," or "lunatics?" or are they to be deemed all four? If they are, in fact, the same as other men, why are they to be deemed by

the Legislature to be different? If they are to be deemed to be as capable as other British workmen, why and how are they to continue to be treated differently? These are questions which have vaguely suggested themselves for some years past, but which have had but little definite consideration. If a sea cook, or the son of a sea cook, is the same sort of being as a land cook, or the son of a land cook, or if a ship carpenter is the same sort of being as a shop's carpenter, and a ship's stoker the same sort of being as a shop's stoker, and a sailor boy as a tailor boy, why should he be treated differently? If they are not the same sort of beings, in what respects do they differ, and does the difference, or do the surroundings, amount to deficiency of such an important factor as to require special State machinery to make up for it either way? These are all questions that some ship-owners, some shipmasters, and some seamen are now looking into with keener vision. The crimps and the keepers of improper houses, and other unclean parasites of the merchant sailor have always held that the State has no right to take trouble, and make special bother and fuss for the protection of British seamen. "Why cannot such a poor fellow be left to spend his money and take his little pleasures as he pleases?" has always been their question: and as a question of political economy it has no answer. "Them as as munny and no branes, is made for them as as braines and no munny"—a sentiment attributed to the "unhappy nobleman of Dartmoor"—is probably the toast a crimp would give if he were chairman of a convivial gathering of crimps. We do not know whether such a meeting is possible, but if it were, no sentiment would be more appropriate to it. That, however, is not the view taken by the shipowner or shipmaster, nor is it the view, said to be all at once, and of a sudden, taken by many British seamen themselves. They take higher ground, such as absolute freedom of contract, and the rights of man. The employer has, it is said, now come to see but little advantage in the Mercantile Marine Office system, which he says is a bar to free contract: and many seamen are said to regard themselves, this month, as free, intelligent, and independent citizens, with full power, and full capability of taking care of themselves against all their enemies

afloat and ashore, and fully alive to their rights as men. "Britons never, never will be slaves," is the sentiment, and so fully convinced are they that they are right, that in their thoroughness and full independence they will sing it at the very moment when their senses are leaving them, helpless lumps of besotten and besoaken flesh, in the hands of their "friend," who is abstracting the last penny from their pockets, and selling them to be conveyed on board ship at so much per head. If Jack believes he will not be a slave, so much the better, or so much the worse. Belief is everything, and is more than everything where facts are awkward.

What a pack of nonsense the whole thing is! A sailor is *not* like another man, and the sea service is *not* like any other service; sea custom and sea service requirements are *totally* different from any other, and for the Legislature or any one to assume they are alike, or can be treated alike, is to assume untruth; and to legislate on it, besides assuming it, would be the height of folly.

The Mercantile Marine Office system can be left to take care of itself: at all events, if it cannot fully put to silence its detractors it ought to be disestablished; but the fact remains that it has detractors who have the power, as well as the will, of making their voices heard. Their arguments are, however, like two-ended weapons. They are like a gun with two barrels placed contrariwise, which cannot be used without inflicting as much, or more, damage on the user than on any one else.

The fourth and fifth sections of the Bill furnish an example, by way of illustrating what we have just written. Under the existing law, a seaman who has once signed articles may be arrested without warrant if he does not join his ship. It is much to the credit of the shipowners of this country that they have used this power with forbearance, and it is equally creditable to the intelligence of the seaman that he has sufficient sense, as a rule, to join his ship if the owner has a reputation for prosecuting deserters.

Those friends of the seaman, advocates of the rights of labour, and apostles of political economy, who regard the intervention of Mercantile Marine Offices as a gratuitous insult to the employed, and a gratuitous menace to the employer, and altogether as an un-

warrantable and unnecessary restriction, will have their views and aims gratified and partly met by the fourth clause, which does away with the power of arrest without warrant until the seaman has once joined his ship. This partly places the British sailor on an even level with the British workman ashore ; but not quite. Clause seven continues in the same direction, but it is a puzzling clause to make out. It first provides that a seaman *may* be arrested without warrant after he has joined the ship, or begun work, and before the ship arrives at the end of the voyage if he “deserts,” or if he is “absent without leave and without sufficient reason ;” then it goes on, secondly, to provide that the seaman shall not be so arrested unless the ship has finally cleared out or left her final port of departure for the voyage, whichever first happens ; then it goes on, thirdly, to provide that the person arresting the seaman may keep him twenty-four hours to take him before a Court, or if the offender “does not require to be taken before the Court,” to at once convey him on board ; and if any one wrongly arrests a seaman he will be liable to a penalty of £20. A pair of conditions have to be fulfilled in every case before an arrest without warrant can take place ; the first pair is (1) the seaman must have joined his ship and have begun work ; and (2) the ship must have finally cleared outwards for the voyage. The second pair is (1) (as before) he must have joined and begun work ; and (2) the ship must have left her final port of departure. In either case, the person arresting the “offender” may, if the offender expresses no desire to go before a Court, convey the offender on board the ship. It is not clear who is to determine whether the offender does not require to be taken before a Court. If the word “request” were substituted for “require” the lawyers would benefit less by the clause than as it stands, and it is not easy to see what general advantage is conferred on the owners and masters of British ships as a body, by giving them the undisputed power of arresting seamen without warrant, and then confining the exercise of the power so given to the period *after* the ship has finally cleared out, or has *left* her final port of departure, although thirdly, it is coupled with the condition that the man may *then* be conveyed on board his ship. It is possible that this clause

may be intended to meet the requirements of some special port or class of ports, and that it is right and quite complete, but in the absence of a full exposition it may be doubted whether a total repeal of the power of arrest without warrant would not be more satisfactory to everybody than the mere retaining of the shadow, coupled with a condition that a man may be conveyed on board a ship that has *finally* gone away, and which places a seaman who never goes near his ship at all in a better position than one who so far fulfils his engagement as to join his ship.

One other point we would offer for consideration. In the absence of power to arrest without warrant, the shipowner or shipmaster must, in pursuing a deserting or defaulting seaman, have recourse to the ordinary summons. This might be very well if seamen always shipped from the ports where they resided, and were easily to be found when wanted. But the fact is, that very many seamen ship from other ports than those where their homes are; many too are foreigners, and many again have no homes but the ships they for the time serve in. How then, in the large majority of cases, could summonses be served? and if served, what chance would there be of a seaman so summoned attending the Court? Has he not deserted, in other words absconded? and would it be worth while to spend time and money in the pursuit of such a deserter? Practically, it would seem that seamen are to be placed in exactly the same position as they were before the power of arrest without warrant was legalised. Is there, then, so great an improvement in the merchant seamen of this generation?

But another complication is likely to arise. A distinction, which is very fine and is likely to give rise to a large crop of law suits, is drawn in the Bill, between absence from "desertion" after joining, and absence without "leave and reason" after joining. Both of these are to be offences, and both are to be punished with imprisonment not exceeding six weeks (instead of twelve as at present), but there is an additional or alternative penalty of forfeiture of wages for an indefinite period, "it may be for years, or it may be for ever," in one case, and for six weeks in the other.

There is a special clause headed "Fraud," to which those persons who would desire to treat British sailors in the same way as

British tailors (we use the word "tailor" as a convenient exemplar of a workman ashore), will object, on the ground that if a tailor can now legally be punished for absconding with wages, a sailor can now also be equally punished without this clause, and because if both cannot be punished neither ought to be punished; and further because a law which is strong enough to inflict adequate punishment on such a wicked wretch as the ninth part of a man (a tailor who absconds with wages), must surely be strong enough to mete out the like punishment to the guilty sailor. We fail to see as a matter of fact that it is less reprehensible in a tailor than in a sailor; but there must be some hidden meaning in this fifth clause, as to advance of money on account of wages; the occurrence of the word "money" is so very noteworthy. Is it that this clause creates a penalty that may be inflicted in addition to other penalties? No, because if the master has caught his man and has sent him to sea in the ship, even after her final departure from her final port, he will not want to imprison him ashore; if he wants to imprison him for this "fraud" he cannot do so, because the evidence that the man received the money is away on the articles with the ship. Is it to give the shipowners an additional hold over men who receive advances? If so, the shipowner can get over it by advancing a shilling, by enlisting the man in fact. Is it meant to be a blow at the advance-note system? We think it is. No one in the most wild flight of imagination would regard an advance note as "money" even now: and if the time arrives when a seaman may not be arrested without warrant, the note which is only a *promise* to pay, if the seaman *does* go, will resemble money still less. We think the clause manifests good intentions, and it, with the others, sounds the death knell of the advance-note; and as no person would advance a penny in cash to a sailor he does not know, it is a blow to all promiscuous advances.

The sailor and the tailor will be on an equality, in one respect at least; neither will get a penny advance unless they are decent bodies, or can give some sort of security. But before we go further, do let us consider for a moment what this Bill is leading to. It proceeds on the assumption that a tailor is like a sailor, and

that tailoring and sailing are almost convertible terms. The Employers and Workmen Act may be of use with a tailor, but with a sailor, who has neither "a local habitation *nor* a name," it cannot work. It will if applied to sailors have one effect beyond all others ; it will give rise to a brisk trade in substitutes, and will lead to danger through the very clause 4, which is intended to lead to safety, for it will be the means of getting on board *at the last moment*, the offscourings of the workhouses and casual wards in the place of those seaman who have signed articles, and have not joined their ships at all.

The fifth clause appears to us to be a very remarkable piece of work. It is of no force if Jack has not received money. Step No. 1 is, Jack receives a shilling, and perhaps an advance besides ; at all events he receives "money." Step 2, Jack goes and repays the shilling instead of going on board, and says he doesn't feel well. There is an end of the matter. The advance note will not, of course, be paid as the owner is not defrauded ; and, as Jack has very wisely not joined the ship, nor begun any work, he waits for the employer to put in force the Employers and Workmen Act. This is quite as it should be ; now let us take the other way about. Jack receives his advance note and his shilling, and does not go and repay the shilling, and does not go on board ; the owner never attempts to put clause 5 into force, unless he has evidence of two things ; the first is, that Jack "wilfully" refused or neglected to go on board ; and the second is that his wilful refusal or neglect was without "reasonable cause." The difficulty of proving that a neglect is wilful *as well as* without reason must be difficult, and as the whole thing can only arise after the ship has finally left, the clause will probably trouble no one.

As a general remark we may mention that it has always struck us that there is too much "dead horse" in the whole system of seamen's "fines" and "discipline," and those persons, if any, who think with us in this, will have an opportunity of curing that evil.

For a sailor to work against a two months' advance note, which a crimp has cashed with "one shilling, a bottle of water diluted

with sulphuric acid and turpentine, two old window curtains and some straw " (as we explained was the case in one of our numbers a year ago), is to work against a very bad " dead horse." To work with the knowledge that heaps of fines are accumulating, which may absorb wages, is another " dead horse." To work in a ship with the knowledge that *all* wages, whatever may be the amount, are forfeited, because of some previous desertion, is another " dead horse," all kept from mortifying by the knowledge that a Government official sees fair play in the end, and often interposes on the side of mercy. In fact all cases in which the seaman is working on the knowledge that fines may be inflicted and wages forfeited perhaps to the master or owner, solely on the evidence of the entries in the log, are all " dead horses." Now if the advocates for abolishing Mercantile Marine Offices have their way, all these " dead horses " would have to disappear or would be liable to " resurrection," for no master or owner of a ship could possibly be permitted of his own free will to inflict and pocket penalties on seamen without appeal, and every deduction or payment claimed to satisfy " dead horse " requirements, would have to be decided in a Court of Law. Mercantile Jack has a great number of advisers and well-wishers about Police Courts when costs can be recovered, and the purity of the motives of these well-wishers is established by the fact, that so long as they see Jack " righted " in the matter of wages, they are quite indifferent which way the decision is given, and are, therefore, equally gratified for his sake whether their costs come out of his wages or out of the shipowner's pocket.

The clause enabling the master to cancel entries in the log is very important, and is evidence that the President of the Board of Trade is as much against " dead horses " as any one.

In all cases of desertion or absence without leave, a single seaman shall, it is proposed, have the right to plead in justification that the ship is unsafe, or that the accommodation on board is insufficient, and he may demand a survey without having made any complaint before leaving the ship. This is no doubt founded on the principle that it is the duty of the owner to see that the ship is sound and properly loaded, and the accommodation for the

crew comfortable and seaworthy, before he invites or allows seamen to go to sea in his ship; and as far as we can make out, the fact that the accommodation is insufficient (say, if the owner has over-manned his ship), will alone absolve the seaman from the consequences of his desertion. Cause and effect may be a long way apart. If the seaman is engaged elsewhere than in the United Kingdom to serve in a ship registered elsewhere than in the place of engagement, and neglects to join his ship, he is to be deemed to be absent without leave; but he may be arrested without warrant if proper provision is not made in the place for the speedy settlement of disputes. There is a very important clause in the shipowner's favour, which is, that if "*any person*" makes an allegation that a ship is "unsafe, or that the accommodation is insufficient," he commits a criminal offence if it is proved that he made the allegation falsely and maliciously and without reasonable and probable cause. We do not know whether "*any*" person in this Bill includes any person other than members of the crew, but if it does, it will probably put a stop to the propagation of scandalous reports that do not at present come within any law, and of which shipowners have at times just cause to complain.

When the ship arrives at the port at which the engagement with the seaman is to end, he may, it is proposed, leave the ship without fear of arrest without warrant, or imprisonment, but be liable to forfeit a month's pay; this is clearly right, he will always do it. There are some excellent clauses as to the settlement of wages; an instalment and the wages account are to be handed to the seaman when he leaves the ship, and his wages are to run on until they are paid, unless the seaman quits his ship without authority, or is himself the cause of delay; and a seaman desirous of getting home may leave the settlement of his wages to the Superintendent, and if the seaman is unfit (we suppose too drunk), to sign his release, his previous directions to the Superintendent may be taken as equivalent to his signature.

There is a clause enacting severe punishment of a master who does not provide for a proper look-out being kept, and also of men who do not keep a proper look-out when told off for the duty; but there is nothing to tell the master what he is to do

when the crew allowed him by the owner is so small that no one at all but himself is available for the look-out. The proposed clause is very wide in its wording. It is very fierce, we may say, on the master and seaman. The master is to *provide* for a proper look-out being duly placed, kept, and relieved. It will, therefore, be the master's duty to see that a proper number of deck hands is engaged; and he will not be in a position to plead, as in a recent case, that he could not keep a look-out because he had only three deck hands altogether. But some masters would go to sea with two deck hands, or none at all, rather than lose their living. It is a question, therefore, whether the responsibility for not "providing" a sufficient crew and keeping a look-out ought not to be a distinct offence, for which the managing owner should be responsible. We really must say a word for the master and seamen here, for it is as impossible for the one to place and relieve the look-out as it is for the seamen to keep it, unless there are sufficient deck hands to relieve each other, after sufficient and proper intervals of rest and sleep.

It might have been desirable to insert a clause in regard to the shipping of incompetent seamen, making the offence penal on both the shipper and the man shipped, considering the serious risk which is at times entailed by the action or inaction of a thorough-going "lubber" on board ship. But this point will probably be brought forward by some suffering shipowner.

There is a clause proposing to give power to masters to cancel entries in the log, a clause making seamen liable to the owner for acts of smuggling, a clause against crimps (which we regard as scarcely strong enough for the purpose), and a clause for cancelling indentures and agreements.

We have endeavoured to point out defects in what we regard the humanitarian and sentimental part of the Bill. They are all defects that can be remedied in Committee. The Bill is one that ought to meet with general approbation, as being, in the main features, those relating to matters while the ship is at sea—that is to say, the discipline, and to the speedy settlement of seamen's wages—a very good Bill. In these points it is clear and simple, and is proportionately valuable. We venture to predict that it will

be acceptable to shipowners and seamen, when one or two slight modifications are made in Committee. There will be in it nothing that harasses anybody, whilst it appears to be a studied and, we think, a very successful attempt to do justice to the seaman on points in which he has been badly dealt with before, and to strengthen the hands of the master where they wanted strengthening.

If we have any fault to find with the Bill, it is that it is rather too much of a lawyer's Bill; but that is a good defect, as the practical part and the making of it intelligible to the multitude is the work of Committee.

[In our number for May, 1877, the clauses of the Employers and Workmen Acts were printed *in extenso*.—ED.]

UNSAFE SHIPS.—A return recently presented to Parliament shows that from the date of the commencement of the "Merchant Shipping Act, 1876" (1st October, 1876), to the 31st December, 1877, 199 vessels were detained for survey by order of the Board of Trade or its officers. Of this number 160 were provisionally detained on account of alleged defects in hull, equipments, or machinery, and 39 in consequence of allegations of overloading or improper loading. Three of the ships, upon survey, were found safe, and consequently released; in one instance the survey is set down as "pending," and in the remaining 195 cases either the Board of Trade officers were satisfied after repairs, &c., and the ships released, or they are reported "still detained." There appears to have been no appeal to a Court of Survey, and it is noticeable that, while only four ships were detained in August, the number gradually increased with the approach of winter. The latter fact rather tends to show that the season of the year is considered in deciding whether a ship is or is not unsafe for the service for which she is intended, and that the detaining officers have not forgotten that a vessel may be safe in summer for a voyage for which in winter she is quite unfit.

THE AMERICAN STORM WARNINGS.

By ROBERT H. SCOTT, F.R.S., SECRETARY TO THE METEOROLOGICAL
COUNCIL.

THE announcements of storms coming from America, which have occasionally appeared in the newspapers during the past year, have naturally attracted much attention on the part of the public. I, therefore, venture to submit to the readers of the *Nautical Magazine* the following notice of the outcome of a private enquiry which I have conducted into the results of these warnings, for the space of eleven months, ending with December, 1877.

The idea that the storms of western Europe were directly connected with West India hurricanes has long been entertained, and in 1853, Martin, in his "Memoir on the Equinoctial Storms of March—April, 1850" (Harrison, Pall Mall), gave a chart of Atlantic Storm Tracks from the period in question. Dove, in his first edition of his *Gesetz der Stürme*, published in his *Klimatologische Beiträge*, part I, 1857, while contending that most European storms exhibit characters entirely different from those of Tropical Cyclones, argues that some of our disturbances originate in West India hurricanes, which, when they have recurved on entering the Temperate Zone, have continued their course in a north-easterly direction over the Atlantic; but he says, "It is evident that the connection between a storm in the Temperate Zone, and the original Cyclone in the Torrid Zone, to which it owes its origin, need not necessarily be traceable, as a continuously advancing minimum, in the lower strata of the atmosphere."

I need not do more than allude to the statements of Mr. Buchan and others, to the effect that certain storms have been traced by them right across the Atlantic, and to the facts shown by the logs of steamers cited by Captain Toynbee in his Report on the Meteorology of the North Atlantic between the parallels of 40° and 50°, published by the Meteorological Office in 1869. The diagrams

given in the last-named paper show that steamers when outward-bound to America often meet a succession of areas of low pressure on their way eastwards, and when homeward-bound to Europe often run with such a system for a considerable time, so that in the former case the changes in the instrumental indications, as well as in winds and weather, are much more rapid than in the latter.

These statements, however, do not prove anything as to the possibility of a meteorologist in the United States being able to say which out of several gales passing out to sea from the American coast will be likely to travel across the Atlantic with unimpaired energy.

This was pretty nearly the actual state of the question when Professor Daniel Draper, in his report of the Central Park Observatory of New York for 1872, stated that in his experience, out of eighty-six atmospherical disturbances expected to cross the Atlantic, only three seem to have failed. This statement was quoted without further comment by Sir G. B. Airy in his Presidential address to the Royal Society in 1873, and thereby derived such additional weight that it seems advisable to examine it more in detail.

The rule given by Professor Draper in his report for 1873 is as follows :—

“ If a low barometer with an easterly wind be prevailing here, the mean travel of this wind per day for twenty-four hours before, and twenty-four hours after the time of the low barometer, is to be divided into 4,200; this will give the number of days that it would require for the storm to cross.”

In analysing this statement we find two points on which some further explanation is required.

Firstly, what is implied by the “ travel ” of the wind ?

The phrase is not usual in this country, but I presume, from the context, that it means “ the distance travelled by the wind,” or in other words its velocity per twenty-four hours. In fact “ velocity ” is used for “ travel ” in the discussion of storm eight (Report for 1873). However, the existence of any proved connection between the velocity of the wind in a storm and the velocity of translation of the storm as a whole is not recognised by European meteoro-

logists, and so we must only suppose that Mr. Draper applies the term "travel" to this motion of translation of the entire disturbance.

Secondly. Information is desirable as to the precise test applied to the disturbance at this side of the Atlantic. Mr. Draper speaks of "storms." The word, in our phraseology, would imply Force 9 of Beaufort's Scale, a strong gale, with a velocity of over fifty-five miles an hour. I can only remark that as a fact, during the period investigated, this velocity was not reached on nearly all of the eighty-three occasions cited at either of the two observatories, Valencia and Falmouth, the returns from which alone Mr. Draper consults as indications of British weather. In fact, if we take the period, February 1 to April 10, 1872, during which Mr. Draper counts eleven of his predictions to have been fulfilled, examination of our anemograms shows that on only two occasions was the velocity of fifty miles reached at either of the observatories cited by Mr. Draper, while that of fifty-five miles was not registered anywhere during the time in question.

I shall, therefore, dismiss this subject with the remark that Mr. Draper was, to say the least, over sanguine in his statements.

Coming now to actual attempts to transmit useful intelligence by telegraph across the Atlantic. The first practical proposal for such a service, as far as I am aware, was made to me in August, 1867, by Mr. John C. Deane, at that time Secretary to the Anglo-American Telegraph Company, and through his instrumentality a station was organised at Heart's Content in Newfoundland, and the first report arrived January 13th, 1868. We received the telegrams *gratis* for the space of nearly four years (up to November 1st, 1871) through the great liberality of the Anglo-American Telegraph Company, but we could not turn them to practical use, partly owing to the circumstance that the site of the station was chosen as a sheltered nook where no storm could possibly hurt the cable, so that the wind felt at the head of the bay, and reported to us, bore little relation to that blowing outside. This fact came prominently into notice at the time of the disappearance of the S.S. *City of Boston* in February, 1870. More particularly, however, was it

difficult to use these telegraphic reports, on account of the circumstance, that though storms may sometimes cross the Atlantic from shore to shore, they change their character *en route*; some increasing and others dying out, so that it is all but impossible to predict which storm, out of several starting from the States, will reach us. Professor Loomis, a very high authority on American weather, supports this view very strongly in the following words, taken from the *American Journal of Science and Art* for January, 1876 :—

“ When storms from the American continent enter upon the Atlantic Ocean they generally undergo important changes in a few days, and are frequently merged in other storms which appear to originate over the ocean, so that we can seldom identify a storm in its course entirely across the Atlantic.”

Accordingly, when in 1871 the Anglo-American Telegraph Company intimated to the Meteorological Committee their intention of discontinuing the free transmission of the reports, that body resolved to allow the service to drop, considering that their money would be better spent on improving their arrangements for receiving information from our own west coasts than in paying for reports from a landlocked harbour in Newfoundland.

The first actual storm warning received by the Meteorological Office from the United States, was on Thursday, December 24th, 1874. It was sent from the Central Signal Office, and was worded as follows :—

“ A low barometer with wind 50 miles per hour left our coast on Sunday, on 40th parallel, and going east. Look out for it.”

The Sunday preceding the 24th had been the 20th, and as no date was fixed for the expected arrival of the storm on our coasts, it is somewhat difficult to know how long an interval ought fairly to be covered by the warning. As a fact, however, we had no disturbance of any kind until the 31st, when a southerly gale came on in Ireland. We accordingly reckon this warning as a failure, as we could not imagine that any seaman would be justified in remaining in port for a whole week of calm weather in daily expectation of a possible gale.

Such was the state of the question, when in February, 1877,

Mr. J. G. Bennett, the well-known proprietor of the *New York Herald*, commenced sending occasional warnings to Europe which have been published in the newspapers.

The Meteorological Office, on the first appearance of these warnings, opened communications with the London Office of the *New York Herald*, and received a most ready response. Since that date we have received, almost without intermission, a copy of each storm-warning telegram which has been transmitted to this country from New York.

I have instituted a careful comparison between these warnings and the weather subsequently experienced in these islands, and the main facts of this comparison are enumerated in the following tables, the headings to which explain themselves.

The general result of the comparison is that during the entire period of nearly eleven months, thirty-six telegrams were received conveying warnings of forty different disturbances.

Classifying these warnings under four categories, viz., A, absolute success; B, partial success; C, very slight success; D, absolute failure; we find—

Class.	No. of Instances.		Percentage.
A	7	..... 17·5
B	10	..... 25·0
C	6	..... 15·0
D	17	..... 42·5
		<hr/> 40	<hr/> 100·0

These figures, therefore, show that not 45 per cent. of the warnings can be considered to be really successful. What is meant by "really successful" is that the information conveyed by them was of real value to seamen in British ports.

The intimation to outward-bound ships that bad weather is prevailing at the other side of the Atlantic at the time that they are leaving port over here may of course be useful, because our own experience tells us that storms in winter, like misfortunes, never come single, and so the disturbed state of weather may perhaps prevail up to the time that they reach the American coast, or at least the longitude of Newfoundland.

If the actual wording of the warnings be examined, we shall see that they are framed with more reference to the conditions of a continental climate, with its abrupt changes, such as prevails in the United States, than to the more genial circumstances in which we live, in an oceanic climate, in these islands. This is sufficiently evident from the frequent forecasts of lightning, and of sudden serious alterations of temperature, hardly one of which has been fulfilled. The prognostications of heavy rains met with more luck, but heavy rain is a safe prophecy for our west coasts at all seasons.

It must not be forgotten that the fact of a gale being reported on the day for which one has been foretold does not *necessarily* prove that the gale felt here has been the same storm as left the American coast. In fact, in the cases of warnings No. 1 and No. 4, the path of the disturbance was in such a direction as, to say the least, would render it extremely improbable that the area of depression in question had come from America. Even though, as was explained in the *Herald* of February 15th, 1877, the area of depression (No. 1.) was in front of an advancing area of high pressure, the area of depression, when it reached this side of the Atlantic, distinctly moved from North to South over several degrees of latitude, and we are absolutely without any evidence as to its supposed track from the States to our neighbourhood. The presumption is that it came to us from the neighbourhood of Iceland. Again, July 12th, No. 23, the automatic records at our observatories show conclusively that the cyclone which occurred on the very day for which one was predicted, did not come from the Atlantic at all, but was formed over these islands.

Nevertheless, all considerations of this nature have been disregarded in drawing up the present analysis, except in the case of the storm of July 12th (No. 23). I have in fact endeavoured to show the degree to which the American warnings may have been useful to captains in British ports.

In conclusion, I can only say that while meteorologists are most deeply indebted to the generous public spirit of the proprietors of the *New York Herald* for their great liberality in transmitting these warnings gratuitously, the statistics given in the foregoing

pages indicate that the results of Mr. Daniel Draper are over sanguine, as regards the possibility of calculating the date of arrival of dangerous storms on our coasts, and that as yet the attempts to foretell weather by means of the Atlantic Cables have not met with a very marked measure of success.

In the present state of our knowledge, we are of opinion that much more good would be done by publishing the facts on which the issue of the warning is from time to time based. It will be impossible to institute a thoroughly satisfactory testing of the warnings until we have before us a long series of synoptic charts of the winds and weather existing between America and Europe, similar to those now in process of publication for the month of August, 1873, by the Meteorological Office, samples of which may be seen in a paper by Captain Toynbee, on the Nova Scotia hurricane of the month in question, which appeared in the *Nautical Magazine* for December, 1877.

COMPARISON OF AMERICAN WARNINGS WITH BRITISH WEATHER IN 1877.

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
1	Feb. 15th. Extract from <i>New York Herald</i> .	<p>"The low area has already passed into the Atlantic Ocean off Nova Scotia, &c., &c.</p> <p>"The rapid decrease of pressure at the centre of the storm during its progress from the Mississippi valley towards the ocean, marks it as one of those dangerous disturbances which sweep over the ocean to Europe with ever-increasing violence.</p> <p>"We therefore predict that on or about the 19th of this month heavy gales will prevail on the British and French coasts."</p>	<p>On the evening of the 19th a deep depression appeared off our north-west coasts; the winds at the time being Wly. to S.Wly., and generally moderate, but blowing a slight gale at Valencia and Penbroke. In the course of the night the disturbance passed very rapidly across England in a south-east direction, and it lay at 8 a.m. (20th) off the coast of Holland. It had produced very heavy gales from N.W. and N. over the west of England during the night, which ex-</p>	Entire success A.	This warning was quite successful as regards the occurrence of a severe gale on the night of the 19th. The message, however, gave no indication of the probable direction of the wind, and the path of the storm, from N.W. to S.E., did not accord with what might have been anticipated had it crossed the Atlantic.

2 Feb. 21st. (Wednesday). Telegram.	"Expect unfavourable weather with gale Friday or Saturday, for British, French, and Spanish coasts."	tended to Franco during the ensuing day.	At the date of receipt of the telegram, pressure was highest in the west, with fresh to strong northerly winds over England. On the night of Friday, the 23rd, a depression crossed the north of Scotland, becoming deeper as it progressed, and the westerly winds increased to a gale at a few stations in the north and west on Saturday night, but there was no rain to matter.	Partial success for northern stations. B. Total failure for south, with France and Spain. D. General result. C.	On Sunday night a subsidiary disturbance crossed England from the N.W., and produced N.W. and W. gales here and on the northern French coasts. The weather could not be described as "unfavourable" (whatever that may imply) until the Sunday, when the rain belonged to the subsidiary disturbance.
3 Feb. 26th. (Monday).	"Probability, bad weather with gale, British and French coasts after Thursday."	On Thursday night, March 1st, a slight depression passed from S.W. to N.E. outside our western and northern western coasts. It pro-	Total failure. D.	The disturbance may possibly have been that referred to in the telegram, but no gale at all occurred.	

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
4	March 4th (Sunday).	"Probable disturbance, gale, rains, British, French coasts middle of week."	duced no gale, except S.W. 8 at Stornaway, and no bad weather at all. On the evening of Tuesday, March 6, a depression appeared off the coast of Norway, with a subsidiary disturbance off the Firth of Forth. This latter had not come from the westward, but advanced in a southerly direction over the North Sea to France, bringing with it northerly gales with some rain and snow showers.	Partial success. B.	The wording of the telegram is so vague, that it is hard to say whether or not it covers a depression moving down the North Sea (compare No. 1). The rain and snow were of no importance.
5	March 10th (Sat'day).	"Dangerous storm crossing the Atlantic, arrive	On Monday, March 12, a serious depression	Entire success. A.	The first disturbance was not notified in the tele-

6	March 16th (Friday).	<p>“Expect unfavourable weather, rains, gale, from Saturday to Tuesday next, British and French coasts.”</p>	<p>passed by the north of Scotland to Norway, with strong gales from W. and N.W. On the 14th (Wednesday), a slight fresh disturbance joined this, increasing the gradients afresh, and the wind rose again at the northern stations, attaining force 10 at Wick, and 9 at other stations.</p>	<p>The disturbance was not of much consequence.</p>	<p>gram, and it was nearly as serious as the second, which was virtually a subsidiary one to it, though the force of the wind in it was great. This gale did not affect England south of Liverpool at all, and was chiefly felt in Scotland. No direction of wind was given in telegram.</p>
7	March 24th (Saturday).	<p>“West Indian storm crossing Atlantic, probably arrive British</p>	<p>At the time of receipt of the telegram a depression had appeared</p>	<p>Partial success. B.</p>	<p>A warning received after the arrival of the depression is nearly useless.</p>

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
		Islands, France, on or before Monday."	at Valencia on Saturday morning. This advanced eastwards and produced heavy E. gales at several stations. No other depression appeared before Monday.		No gale in France.
8	March 31st (Saturday).	"Storm crossing Atlantic will strike North British coasts probably about Tuesday, south-west to north-west gales and rain."	On Tuesday, April 3, a depression appeared off the Coast of Ireland, and gradually became filled up without advancing further than the mouth of St. George's Channel. It produced no gale at all, except S.E. 8 and 9, in the Moray Firth and in Shetland, on the Thursday morning, but was accompanied by general and heavy rainfall.	Total failure. D.	The partial fulfilment of a gale, on Thursday, in Caithness (48 miles an hour, at 7 a.m., at Sandwick, in the Orkneys), is too slight to be worth notice. No other part of the North British coasts felt the gale.

9	April 10th (Tuesday).	"Expect storm centre; North British coasts; Tuesday or Wednesday, probable rains S.E. and S.W. gales."	On Tuesday and Wednesday, April 10-11, small depressions crossed the centre of England. They produced no gales; and in the north the N.E. wind was undisturbed, though it increased in force temporarily.	Total failure. D.	The warning was late. The depression which appeared was insignificant, did not affect the North British coasts, and caused no "S.E. to S.W. gales."
10	April 14th (Saturday).	"Heavy storm crossing Atlantic from southwest, arrive British, French, and probably Spanish coasts, Saturday or Sunday; gales N.E. to S.W., probable heavy rains."	A deep depression appeared on our coasts on Sunday and on Monday its centre reached the Irish coasts. It then took a southeasterly direction, and on Tuesday morning lay near Rochefort. It produced heavy S.E. gales, especially on the east coast, and these moderated and backed to N.E.; while the westerly gales on the southern side affected Biarritz and Corunna on the Tuesday.	Entire success. A.	The only qualification to the words "entire success" is that the gales were due S.E.; no N.E. or S.W. gales were reported.

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
11	April 17th (Tuesday).	"Depression, with unfavourable conditions; rains and gales from S.E. to N.W. will probably arrive European coast on or before Wednesday next."	No new depression appeared on Wednesday: that referred to in No. 10 was just passing off. Weather remained dry.	Total failure. D.	
12	April 23rd (Monday).	"Expect stormy weather with gales from the S.E. to N.W., probably heavy rains and lightnings, British and French coasts, about Wednesday or Thursday."	Pressure was highest in Norway during three days. The wind in the United Kingdom was S.E. to E. It freshened in force, and on Tuesday night blew as a slight gale at Holyhead, St. Ann's Head and Scilly. Rain fell in the S.W. Thursday and Friday.	Total failure France. D. Partial failure England. C. General result. C.	No new depression arrived. No wind from any point between S.E. and N.W. here or in France. Rain very local in south-west, no lightning.
18	April 30th (Monday).	"Unfavourable weather on Tuesday and Wednesday, probable for	An anti-cyclone lay over these islands on the Tuesday and Wednesday	Total failure. D.	

14	May 8th (Tuesday).	British Coasts, rains and lightning." "A considerable depression is moving N.E. wards from Newfoundland. It will affect weather on the northern coasts of British Islands and Norway, on or about Thursday."	day with light winds, dry weather and no lightning. Throughout the period pressure was highest in Northern Norway. On Thursday a very slight disturbance appeared in the west and crossed the south of England. It did not affect the winds on the northern coasts or Norway beyond a slight increase of force.	Total failure. D.
15	May 10th (Thursday).	"Cyclonic storm rapidly crossing the Atlantic, probably strike North British, Norway coasts about Friday, heavy S.E., S.W. winds; rains."	No depression appeared on the days mentioned, the winds were light, rain was general; but not in large amount, except in the west of France.	Total failure. D.
16	May 12th (Saturday).	"Depression moving across Atlantic, arrive on or before Tuesday, British, French coasts."	A very slight depression appeared over Ireland on Monday, the 14th; it passed on and became	Very slight success. C. There is no doubt that the rain on the Tuesday was connected with the depression.

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
17	May 21st (Monday).	Heavy N.E., S.W. winds, rain, possible lightning. Ships outward North America after coming week, expect icebergs on northern route." "Depression moving eastwards Nova Scotia, will reach British, possibly French coasts about Friday, N.E. gale shifting S.W., rain, rising temperature."	filled up in the course of Tuesday. It brought rain, but, not in large quantity, no lightning, and no wind force above 6. The weather up to Friday was anti-cyclonic, the highest readings being in the west.	Total failure. D.	A warning on Monday for a gale possible on Friday, and really arriving on Sunday, is quite useless. The gale was very slight, and did not affect France at all.
18	May 25th (Friday).	"Elongated depression moving N.E. wards from New England coast; probably approach British, French coasts from west and south-west; arriving Europe about 23th. Strong	On the Friday night the barometer began to give way on the western coasts, and by Saturday evening the wind freshened from the south, with heavy rain in the north of Scot-	Partial success. B.	On Sunday the depression had become serious for the season, if measured by the extent of barometrical disturbance; but no wind of any consequence was experienced. The gale

land. By Sunday morning a well-defined depression appeared off the N.W. coast of Scotland. No lightning was reported. Temperature did not rise. On Monday the depression was disappearing from our northern coasts. It had been serious (lowest reading 28.61 at Stornoway Monday 6 p.m.), but passed off in a northerly direction. No N.E. winds at all were felt, and no strong winds from N.W. Heavy rain fell on Sunday at Holyhead, and generally.

Total failure D.

"Depression crossing Atlantic N.Ely. from Newfoundland, will pass over North British coasts about 15th, probably with heavy rains.

19 June 12th
(Tuesday).

had announced itself on the Saturday night, and the heaviest rain fell before Monday. France was not affected; no lightning and no N.E. wind were reported.

The depression was an elongated one.

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
20	June 17th (Sunday).	Expect strong S.E.-S.W. winds, shifting westwards by Saturday; rising temperature."	Up to the evening of the 21st no disturbance of any kind appeared, and weather was perfectly dry, light winds, and no squalls. On the 21st a depression appeared, which crossed central England, causing a N.E. gale in the north of Scotland, with very heavy rain, which extended over England as the depression passed on.	Warning for 18th, total failure. D. Warning for 21st, partial success. B.	The only reason for doubting the "partial success" is, that the centre of the depression did not pass over Scotland. Temperature did not rise.
21	June 24.	"Deep depression leaving coasts Nova Scotia,	On the night of the 25th, a very slight depression	Very partial success. C.	The success refers to the weather only.

22	July 4.	<p>eastern direction; expect stormy weather British, North French coasts, 26th and 27th, N. E. to N. W. gales, rains, and warm, followed by cooler weather."</p> <p>"Storm centre will arrive British, French coasts, probably 5th or 6th; N. E. to S. W. gales, rains, and lightning. Warn outward-bound ships."</p>	<p>The weather was very quiet on the 5th, and a very shallow depression crossed England on that evening and next day. The northerly winds in its rear were rather fresh on the 7th. Thunderstorms were pretty frequent on the 5th in England.</p>	<p>passed along the north of Scotland, producing rain at the northern stations, but no gale of any kind and no oscillation of temperature of any importance.</p>	<p>Very partial success. C.</p>	<p>No gale of any kind. Thunderstorms of no importance, but they furnish the only title to success.</p>
23	July 12.	<p>"Depressions moving N. E. wards from Lower Canada, will probably affect weather on North British coasts by 15th, Stormy S. W. to N. W. winds."</p>	<p>On the 14th, a shallow depression advanced to Wales from the N. W. It was then joined by a more serious depression coming from the S. W.;</p>	<p>On the 14th, a shallow depression advanced to Wales from the N. W. It was then joined by a more serious depression coming from the S. W.;</p>	<p>Partial success. B.</p>	<p>It is undeniable that a serious disturbance of weather occurred on the 15th, but it is equally clear that this disturbance did not advance in its full intensity on our</p>

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or other- wise.	Remarks.
24	Aug. 5.	"Depression will reach British, French coasts 10th, preceded and followed by minor dis- turbances. Strong S.E. to N.W. winds, rains, and rapid varia- tions of temperature."	A disturbance had reached the S. coasts of Ireland on the 8th, causing strong S.E. winds in the west of England. By 8 a.m. on the 9th, its centre lay near 'Scurbro' and		coasts from any side, but was formed out of a very insignificant dis- turbance while it lay over these islands. Although, therefore, the telegram does not dis- tinctly say that the de- pressions coming from Canada would reach these islands, it seems fair to assume that some such occurrence was anticipated, and this anticipation was not fulfilled.
			became much deeper, and at 8 a.m. 15th, the centre lay near Liver- pool (reading 28.98 ins.), with a W. gale at Holyhead and very heavy rains. The de- pression remained pre- cisely in the same position, gradually fill- ing up, till the night of the 16th when it moved away rapidly to the eastward.	Total failure. D.	The disturbance which brought the rain must have been one of the "minor" ones. On the 10th, all passed off, and weather was quite fine. No disturbances of any note followed.

25	Sept. 20th.	<p>"Expect depression North British coasts 24th; strong S.E., N.W. winds, rain.</p> <p>"Dangerous cyclone about to cross Atlantic northward Bermudas; probably reach British, French coasts 27th; heavy gales, rains."</p>	<p>it was filling up, and by the 10th it had passed quite away. It caused no great variations of temperature, but brought heavy rains on the 8th.</p>	<p>Total failure. D.</p> <p>Total failure D.</p>	<p>The only depression which appeared on the 28th was one which passed far north of the Shetlands, close to the Arctic circle, as is usual when an anti-cyclone lies over the United Kingdom. The Cunard R.M.S. <i>Abyssinia</i> arrived at Liverpool Sept. 30, and on the 25th experienced "a cyclone from N., and was hove to for 27 hours" in lat. $45^{\circ} 38'$ N., long. $41^{\circ} 56'$ W. This was possibly the disturbance referred to in the telegram, but it never reached our coasts.</p>
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Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
26	Oct. 3rd.	"Cyclonic storm crossing Atlantic on course parallel to and about ten degrees north of a line drawn from Bermudas, through Azores, to Bay of Biscay. Winds very violent, but progress of storm slow. Lightning and heavy rains."	After the 3rd, the first disturbance which approached our coasts was on the 6th, when in the evening a depression advanced to the north of Norway from the north-westward. It subsequently moved southwards, and grew deeper, causing our winds to draw to north on the 8th, and blow a slight N.E. gale at some of our eastern stations. No rain of any consequence, and no lightning.	Total failure D.	It is not at all probable that a depression moving from north to south over Norway could be that indicated in the telegram.
27	Oct. 7th.	"Great cyclonic storm moving rapidly towards Europe, will probably strike Norwegian,	On the morning of the 10th the barometer began to fall briskly in the north, and by next	Partial success. B.	The depression was extensive, and struck the northern parts of Norway; but it took a path

far to the north of that predicted for it, as it gave rise to no easterly gales, and did not affect France at all.

28 Oct. 15th.
Taken from
the *Times*.
No copy
received at
the office.

"Succession of depressions — probably four — attended by heavy winds and rains, will reach British coasts during next ten days. Brief periods of fine weather will alternate with these disturbances. First of latter will arrive about 15th."

morning the centre of a large depression lay north of the Shetlands. It then advanced to the coast of Norway, producing moderate W. to N.W. gales in north Scotland, with heavy rains locally, but no easterly gale anywhere.

On the 14th a depression reached our coasts, causing the most serious southerly gale which has occurred in the south of England for some years. The centre lay near the Shetlands on the 15th. The other depressions which affected us were one on the 19th, which did not come to our coasts; one on the 20th, which passed to the N.N.E., outside our west coasts, but produced southerly gales

Partial success.
B.

The first disturbance was a very serious one, but the warning for it came a day too late, so it must be reckoned as a failure. The other disturbances were slight. However, there were four within ten days, with (of course) brief fine intervals between.

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
29	Oct. 23rd.	"Storm, probably severe, strike British coasts 27th. Rains, heavy gales S.E. to N.W. will prevail; dangerous to vessels bound to American ports north of lat. 35°."	at the western stations; and one on the 22nd, which crossed these islands, but produced no gales. Weather was very wet throughout, but with fine intervals. On the night of the 26th a depression skirted our west and north-west coasts, causing some gales from S. The winds veered during 27th, and on 29th a far more serious disturbance came, causing stiff southerly gales.	Entire success. A.	The disturbance of the 26th is apparently that spoken of, but depressions followed so quickly one after another that the storm of the 29th may perhaps also be allowed as a success for the same telegram, although two days later than predicted.
80	Nov. 2nd.	"Stormy weather will prevail British, French coasts from 4th to 9th ;	The weather at the period was very disturbed, several depressions	Partial success. B.	The discrepancies between the warning and the facts consist in :—

British affected first. Gales, heavy rains, and probably snow. Rapid variations of temperature."

passed outside our coasts, but produced no very heavy gales. No gale whatever was felt in France. Weather was very wet, but no snow and no variations of temperature of any importance, except on the nights of the 7th, 8th.

31 Nov. 8.

"A storm will arrive on British, French coasts from S.W. about 10th, attended by heavy rains and S.W. and N.W. gales, followed by rapidly rising barometer and low temperature."

Two depressions arrived from the Atlantic: the first on the night of the 9th, which produced no serious gale, but after it passed off northwards, another very serious one came on, on the 11th, and produced very heavy

1. The absence of gale in France.
2. The absence of snow even in Norway.
3. The absence of any serious change of temperature except on one night.

These point to an incorrect forecast of the paths of the depressions: the centres lying outside our west coasts, and the disturbances coming in such rapid succession along a N.Ely. path, that the wind never veered to north.

Entire success.
A.

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
32	Nov. 14. Copied from the <i>Times</i> , no copy received at Office.	"Stormy weather with heavy rain and snow, will probably prevail on the North British coasts about the 15th, followed by a high state of the barometer and a low temperature."	<p>southerly gales. When this passed off on the 13th the barometer rose very rapidly.</p> <p>On the night of the 14th a deep depression skirted the north coast, producing S. to S.W. and W. gales in Scotland. Rainfall was not heavy except at Storm-oway. No snow fell. The barometer rose after the depression had passed. Temperature fell by the 17th.</p>	Entire success. A.	As regards the general fact of the arrival of the disturbance, the success was complete, but the details as to rain and snow were quite wrong.
33	Nov. 21.	"A storm will strike the British and French coasts about 25th inst., and will probably be severest in the northern section of the	On the night of the 26th, a deep depression passed over the north of Scotland. It produced slight gales from S.W. at some stations	Partial success. B.	On the evening of the 24th a small depression had passed up the channel, producing stiff gales from S.E. to N.E. at our southern stations,

34 Nov. 30.

"South-westerly gales and rain East Atlantic, north of lat. 30°, until about 4th, then north-westerly with snow squalls and very low temperature until the 10th. Stormy weather, chiefly on the North British coasts, between the above dates, attending movements of extensive depression."

with rain. No N.W. gales, no snow, and no *serious* fall of temperature.

Total failure. D.

From the 1st to the 4th the winds were northerly, veering to E. by the 8rd, with very little rain. On the 4th a slight depression came to the north of Scotland and produced southerly winds, and on the 6th a serious disturbance appeared, causing strong gales from south at some stations. There was no north-west wind at all up to the 10th, and the temperature was rather high.

with heavy N.W. gales in Cornwall and the Bay of Biscay. It did not affect the north at all.

If this was the disturbance referred to in the telegram, its path was entirely miscalculated.

It is not easy to test a warning for the East Atlantic, whatever that may mean. For these islands, if light southerly winds and rain had been foretold for the latter period, and north-westerly for the former, the result would have been favourable to the forecast. As it was, the failure for these islands was utter.

Reference No.	Date.	Warning.	Distribution of pressure and winds reported at period referred to.	Success or otherwise.	Remarks.
85	Dec. 8th. Copied from the <i>Times</i> , no copy received at office.	"A severe storm will strike British, and probably French coasts about the 10th, strong gales from S.W. to N.W., high, followed by low temperature; general heavy rains and snow in the northern districts. Warn vessels leaving for Boston, New York, and St. Lawrence."	On the 11th a serious depression advanced to the west coast of Scotland, and caused heavy S. to S.W. gales. The changes of temperature connected with it were rapid and serious. Rain was heavy, but no snow was reported.	Entire success. A.	
86	Dec. 14th.	"Storm centres will arrive British, probably French coasts on 15th, 17th and 19th, each attended by S.E. to N.W. gales. Rains in southern, and snow in northern British districts."	On the 15th a very slight depression skirted our N.W. coasts, but produced no gales. On the 17th and 19th, there were no disturbances at all. There was very little rain and next to no snow.	1. Very slight success. C. 2. Total failure. D. 3. Total failure. D.	The disturbance of the 15th may be called a storm centre.

THE NAVIES OF ITALY AND AUSTRIA.

RECENT wars having been more essentially military than naval—the operations having been carried out more upon land than upon the seas—it is not surprising that the attention of the world should have been fixed more upon the progress of armies than of fleets. In addition to this, the extraordinary changes in the political condition of the States of Europe, which have followed with more or less directness from the adoption of particular systems of military organisation, have naturally thrown into more distinct relief all that concerns the maintenance and improvement of land-forces as distinguished from those of which the exclusive employment is destined to be on the water. There is not a country in Europe, not even Denmark or Switzerland, which has not—within the last ten years—been busily engaged in the improvement of its army. The number of men under arms, as we often hear, has never been so great during peace as it has been of late, and Europe never perhaps presented so much the appearance of a standing camp as it has done since the beginning of the present decade. Under these circumstances, the fact that there has been a concurrent advance in naval affairs has been overlooked. We have hardly yet realised that there are in existence at this moment several navies whose real authentic history can scarcely go back even to the comparatively recent period of our own glorious naval victories. Occasionally it does flash upon Englishmen that, whilst the war departments of the Continent have been so busy in perfecting schemes of organisation and equipment, the Ministries of Marine have not been idle, and that more than one flag—formerly but little known upon the ocean—now floats over squadrons, which, in both *matériel* and *personnel*, are too important to be passed by unnoticed in a computation of the armed strength of nations. Very late events have concentrated observation upon the proceedings of the southern powers, and the Navies of Italy and Austria—interesting in themselves as instances of rapid development—have attracted increased attention from the proximity of their head-quarters to the scene of the moving occurrences of the last eight months.

In no Navy in Europe has a more radical scheme of reform been tried than in that of Italy. In other Navies the change, though complete, has been gradual and almost slow ; but in the Italian fleet it has been the result of a direct, if not altogether successful attempt at revolution. Four or five years ago, the then Minister of Marine, Admiral St. Bon, made a statement in the Chamber—which was very fully reported in the English newspapers—of the revolutionary naval policy (there is really no other expression to be applied to it), which it was his intention to adopt. He proposed to sell the greater part of the national fleet. The vessels to be included in this remarkable sale were seven iron-clads, thirteen steam vessels propelled by screws, ten paddle-wheel steamers, and two sailing frigates. The whole reached the respectable total of thirty-two. The proposals of the Minister of Marine were sanctioned by the Parliament, and were received by some Naval critics in this country with unmeasured approval. The latter pointed many a moral with the name of Admiral St. Bon. The Italian flag, we heard, was to disappear from the high seas : Italy, admitting her inability to cope with the great naval powers of Europe, was going to content herself with providing an effective system of defence for her coasts, and was going to devote all the money she had to spare to the improvement and strengthening of her Army only. How far these prognostications even approached the truth, the present condition of her Navy will show.

In the first place it was found to be impossible to get purchasers for the discarded vessels. Out of the thirty-two offered for sale, two small vessels only could find buyers. It became necessary to break up the others—we in this country know how expensive a process that often is—and sell the materials of which they had been composed. This part of Admiral St. Bon's scheme turned out, and is now admitted to have been a complete failure. Those who saw, in this wholesale depletion of her fleet, a disposition on the part of Italy, still smarting under the bitter disappointment of Lissa, to retire from the circle of maritime powers were greatly mistaken. The policy she adopted was that of transforming her *matériel* in accordance with modern requirements and improving her ports. She has since been steadily working at the completion

of these objects, and in 1876 her dockyards and practice grounds had never been busier scenes.

The iron-clad fleet, including two of which the building has just been begun, comprises eighteen vessels. Of these, five are of an old design and, though by no means useless for many of the purposes of war, have been relegated to a subordinate position in the list. The most powerful of those afloat are the *Duilio* and the *Dandolo*. The former, owing to her extraordinary armament, and to the monstrous guns composing it having been constructed in this country, has been the subject of much comment amongst ourselves. As she has actually been in commission and only last month completed a voyage, during which she gave the greatest satisfaction to the authorities, we must regard her as absolutely the most powerful ship in existence which is in a condition to proceed to sea immediately. She unites in her construction all the recent improvements which naval architects have introduced into their art. Design being so much a matter of opinion it is not quite safe to say the same of the ideas which have dictated her plan. But, however much opinions may vary as to the best type of fighting ships, the most ardent supporters of particular plans will not deny that the *Duilio* is one of the most formidable creations of the constructor's art. Her size naturally is considerable. Her length is 339 feet, and—in accordance with the more recent practice of increasing the beam—her breadth sixty-five feet. Her displacement in tons is no less than 10,650. Her hull is entirely composed of iron and steel, the latter material having been used wherever its peculiar properties rendered its introduction into the structure more advisable than that of iron. In the centre of the ship is a huge iron-clad compartment, of which the length is equal to about half that of the whole vessel, and the breadth only some nine feet less than the extreme beam. This protected division is carried to a distance of five feet below the water-line. On this is built another central iron-clad compartment, in which are enclosed the bases of the turrets, which are thus provided with an efficient defence against hostile fire. This is a matter of considerable importance in all turret vessels, and in the *Duilio* is especially so, as the hydraulic leading gear for the guns invented

by Mr. Rendell is also embraced by it. Above this second compartment are the turrets. Their centres are at a distance of eight feet from the line of the keel, and they are thus enabled to fire at least one of their two guns right a-head, or right a-stern in addition to both the guns of the other turrets. The plating of this powerful vessel is in some places as thick as twenty-two inches. Great care has been exhibited in the selection of the armour plates, and those used were chosen only after a series of competitive trials as to their resisting powers against heavy artillery, in which the celebrated firm of Cammel, of Sheffield, the Creuzot Iron Works, and M. Marrel were represented. The guns, as we have all heard, are of the prodigious weight of one hundred tons, and throw a projectile weighing no less than 2,500 pounds; the "energy" or striking force of which is, in mechanical terms, equal to 29,000 foot-tons. The engines, boilers, and magazines, are protected by being within the lower and larger iron-clad compartment; and the rest of the ship, before and abaft this central division, is provided with horizontal armour, that is with a thickly plated deck, as a protection against "plunging" fire. The offensive powers of the *Duilio* are not confined to those supplied by her stupendous artillery. She is fitted with a rambow, which her speed and turning power, as she has two screws, will undoubtedly render highly formidable. But one of the most extraordinary features of this truly remarkable vessel is that she carries in a kind of tunnel, a-stern, from which it can be launched with ease, a fast torpedo boat, likely to prove an exceeding useful auxiliary in a general action. The speed at which she can steam is fourteen knots, and she can stow no less than 1,200 tons of fuel. Her consumption of coal is necessarily large, but it is stated that she can steam 1,000 miles at full speed, and 4,000 at the most economical rate of fuel expenditure.

We have given a somewhat full and detailed description of this powerful man-of-war, as her construction shows how very much mistaken were those writers in England, who assumed readily that Italy had no intention of continuing to keep her place amongst the naval powers. The *Duilio* it should be remembered is only one vessel; and a consort, a sister ship, is rapidly approaching com-

pletion. That the country should find it possible to turn out such imposing craft is convincing proof that there is absolutely no desire on the part of its rulers to resign the enormous advantages, which the possession of an extended coast line has given to it. And we ourselves may learn a lesson from the fact, that even a kingdom not completely divided by the sea from its neighbours, is still persuaded of the necessity of providing itself with adequate maritime defence. The *Dandolo*, the sister vessel of the *Duilio*, is not likely to fall behind her in efficiency, and no one will care to assert that a fleet containing such vessels is not worthy of serious notice.

But the Italian Ministry of Marine has not stopped at the launching of these two turret-ships. They have actually caused to be laid down at Castellamare, near Naples, a vessel, to be called the *Italia*, by the side of which the two latter vessels will find themselves entitled to only the second place. This still more extraordinary craft is to have a displacement of 14,000 tons, and is to carry armour-plates thirty-six inches in thickness. The design of the *Italia* is as novel as the ideas developed in her size and her armour are advanced. Above the deck will be built a casemated citadel of oval form, about six and a half feet in height. The lower axis of this citadel will form an angle of about twenty degrees with the line of keel. At either extremity will be mounted two guns *en barbette*. These guns will be placed upon revolving turn-tables, and the system of mounting, in some measure, will resemble that in use on board several of the newer French ironclads and our own vessel the *Téméraire*. It is not yet decided what nature of gun is to be carried, but it is expected, with some reason, that it will be the same as those constructed for the *Duilio*. The *Italia* will be propelled by two screws, and will have probably compound engines with six cylinders, three in each pair. It is expected that she will be able to work up to no less than 18,000 I. H. P., and that her extreme speed will be sixteen knots. The size, speed, armourment, and plating of this vessel all prove how determined the naval authorities of the Italian Kingdom are to keep their country in the very fore-front of nautical progress. The ship is to have a consort to be called the *Lepanto*, which is to be laid down, we believe, or by this time actually has been laid down,

at Spezzia. That the estimated cost of each of these gigantic constructions is to amount to no less than 15,000,000 of francs, or £600,000 sterling, establishes beyond the possibility of doubt, that the Italians are prepared to make considerable sacrifices rather than forego the advantages of possessing a strong fleet, which the physical configuration of their country, and many incidents in their previous history, invite them so urgently to maintain.

A distinguished French naval architect has expressed his belief that these vessels are probably the last that will be constructed of the kind, of the huge and comparatively unwieldy kind, that is, of which both they and the *Duilio* and *Dandolo* are types. He is of opinion that the farthest limit of size has been reached in them, or possibly even overstepped, and that a result of their trials at sea will be to cause naval constructors to retrace their steps, and content themselves with turning out craft of the more manageable size of about 8,000 tons displacement. If this be the case, we shall again find in the Navy of Italy an additional reason for being interested, as her latest efforts in naval architecture may mark an epoch in iron-clad construction. Her fleet, nevertheless, is not unprovided with ships of the more moderate size alluded to; ships which are still formidable from every point of view. The *Venezia*, built in England in 1871, is the representative of a class in which there are three other vessels. They are all broadside, sea-going cruisers, having a displacement of about 6,500 tons, and propelled by engines working up to 1,800 I. H. P. Their armament is a powerful one; they carry one twenty-five ton and six eighteen ton guns. Their plating at the water line is in some places not less than nine and a half inches thick. These four vessels may be taken as holding a place intermediate between the types represented by our own *Hercules* and *Audacious*, and are rated in the official list as second-class vessels.

The third class includes the *Affondatore*, which, it will be remembered, was so roughly handled at Lissa that she sank at her moorings, in the harbour of Ancona, shortly after the action; and nine others, amongst the latter the five older vessels (*horns type*), are enumerated. The *Affondatore*, though one of the early turret-ships, is still considered an efficient vessel, if we may so argue from

the fact that she at this moment belongs to the "Permanent Squadron," as it is called, of cruising ships—a force answering somewhat to our own Channel Fleet. There has been in the Italian dockyards no neglect of the lighter classes of ships, and several rapid corvettes have been recently added to the Navy. The list of wooden vessels is composed of nine frigates, eight corvettes, and twenty-four paddle-wheel steamers, for various purposes, and gunboats. There are besides nearly twenty transports—a kind of vessel which the many islands belonging to the kingdom and the large garrisons kept up in them render very necessary. There are also a goodly list of special torpedo vessels and Thornycroft launches. Of the former the most remarkable is the *Pietro Micca*, of which the displacement is over 500 tons. She is built entirely of iron, and is not protected by any side-armour, but has a thickly-plated deck below the water-line. Her engines can indicate 1,400 H.P., and her speed is said to be eighteen knots an hour. Her armament consists of ten Whitehead torpedoes and two *mitrailleuses*.

Though the guns of the great turret-ships had to be made at Elswick, and on board other vessels those constructed by Krupp are carried yet, there are works in Italy said to be capable of producing weapons of the most powerful description. General Rosset has urged the Government to permit their new guns required for the vessels still uncompleted to be manufactured at the Royal gun factories near Turin, and has sent in a plan for a ninety-ton gun, which, he claims, shall equal the hundred-ton guns of the *Duilio*. There are important building yards at Castellamare and at Spezzia—the latter one of the most efficient in Europe—and naval stations and yards at other places, notably at Venice, where some of the wooden corvettes have been constructed. The staff of the Italian Navy consists of one full admiral, one vice-admiral, ten rear-admirals, and nearly 300 other officers. The number of seamen was over 7,000, and there is besides a considerable force of marines. Since the beginning of the present year the number of men has been materially increased. The system of recruiting is founded on the French *Inscription Maritime*; and the seafaring population, upon which the Italian Navy can draw for its reserves, is estimated at upwards of 150,000.

Of Austria it has lately been said by a highly competent French critic, that although "She does not possess a great number of ships, and if her fleet be judged merely in accordance with the effective force of its *matériel*, it would have to be classed amongst the smaller Navies, yet the compactness of her organisation, and especially the distinction of her officers and the discipline of her crews, assign it a superior rank." The victory of Lissa, however unsatisfactory tacticians may have thought it, undoubtedly astounded the world. That Austria possessed a Navy was then first realised, yet her seamen have been companions-in-arms of our own. At Beyrout in 1840, and again at St. Jean d'Acre, Austrian ships bore a part, and a honourable part with ourselves in the struggle in which we were then engaged. Austria and Italy are the only two powers who have fought a general action at sea since the introduction of iron-clads. We cannot then refuse to believe that though to Tegetthoff's genius is to be attributed the greater part of the honours of the startling day at Lissa, yet had he not been ably seconded he would hardly have won for his service and himself the renown which he did.

The Austrian Navy is presided over by a section of the Ministry of War, and there does not appear to be an independent Ministry of Marine. The head of this section is Commander-in-Chief of the Navy, and—to use our English terms—Port-Admiral of Pola, and the Maritime district of Trieste. Including one building, there are eleven iron-clad vessels, of which eight are of the first class, and are distinguished as sea-going cruising line-of-battle ships. There are three vessels designated frigates. The peculiarity of the Austrian ships is that, almost without exception, they are built on the broadside principle with a central battery or casemate. The exceptions are two small turret-vessels or monitors—the *Leitha* and the *Maros*—for river service, whose station is the Danube. The designs of the Austrian constructors, though not rivalling in audacity those of their Italian neighbours, and consequently demanding a less detailed description, nevertheless exhibit evident marks of skill and forethought, and have not been without their effect upon even our own naval architects in England. The most important vessel is the *Tegetthoff*. Her displacement in tons is

7,400; thus she fulfils one of the conditions which the eminent French authority quoted above considers essential. Her engines work up to 8,000 I. H. P., and her speed, though not specified in any accessible account, is said to be considerable. A feature of her design is that it enables her to deliver a heavy bow fire. Her armour plating is of great strength, and in some places it reaches a thickness of thirteen inches; and she carries no less than six twenty-five ton guns. The *Custoza*, the *Lissa*, and the *Kaiser* all carry eighteen ton guns and their armour varies from six and a quarter to nine and a half inches in thickness. Their displacement ranges from nearly 6,000 to nearly 7,000 tons. Many of the vessels on the Austrian Navy List are built of wood, and plated like those vessels of the *Caledonia* type, which have now almost disappeared from our own fleet. But the Austrians have found it advisable to rebuild several of them, and it is believed that they have succeeded remarkably in rendering them not unworthy of a place amongst the fighting ships of the day. The whole number of vessels flying the war flag of the Empire is about sixty, and several of the wooden frigates and corvettes of recent construction are formidable ships and monuments of their designers' skill.

The guns mounted on board most of the Emperor's ships have been made at Krupp's works, at Essen; in some cases they are Armstrong muzzle-loaders of the same nature as those which have rendered the name of Elswick famous. But the success which has attended the efforts of General Uchatius to give to the army field-guns of the peculiar metal which he has invented, is supposed to render it likely that Austria will now endeavour to supply herself with whatever weapons she requires. Krupp's breech-loading guns are undoubtedly marvellous pieces of workmanship and of mechanical ingenuity, but many of the inherent vices of every such system are intensified in them, owing to the numbers and intricate arrangement of the moving parts. To an English gunnery officer's eye they appear highly complicated; and they have, moreover, a specific defect, peculiar to weapons so constructed, which is not necessarily connected with the system of loading, they are liable to burst explosively. From this danger the built-up guns on the Armstrong principle and on that modified

by Fraser are free. In spite of the favour with which the productions of Krupp are regarded in Germany and Russia, there is good reason to believe that they will soon cease to form the armament of the heaviest ships unless they are considerably altered.


The *personnel* of the Austrian Navy consists of between 500 and 600 officers and 6,000 seamen and boys. To man all the ships, about 10,000 men would be required. The system of recruiting is partly by voluntary enlistment and partly by conscription. The term of service is three years in the active Navy, and seven in the reserve. The corps of seamen is divided into two depôts, of six companies each. They are capable of being quickly raised to a war footing of 11,500 men. The training schools for the Austrian service are, and have long been, deservedly celebrated for their excellence. The instruction of the officers is of a very high order, and the boys who are trained to fill most of the places of the petty officers receive an admirable technical education. The *physique* of the men is especially good, and British officers who have seen them freely admit that the officers and men of the Emperor's service are fully deserving of the credit which they universally obtain. The staff is composed of one admiral, two vice-admirals, and five rear-admirals. The sea-faring population of the Empire is calculated at about 28,000, a number quite sufficient to supply a respectable reserve. The ships not in commission are said to be in such a state of readiness, that they can soon be prepared for sea; which there is no reason to doubt, as it is the practice of the Government to occasionally fit out squadrons for temporary service and experimental cruises. Pola is the great seaport of the Empire, and at it the chief dock-yard is situated. Trieste is the naval arsenal, but it has also the means of building vessels of considerable size: at it are stored immense quantities of *matériel*. Fiume has important private engine works, and there Mr. Whitehead, the inventor of the torpedo which bears his name, has his factory. The latter weapon has naturally been largely adopted by the Austrians, the first to take advantage of the invention.

This brief survey of the Navies of Italy and Austria will exhibit

how important has been the progress which these two countries have made in maritime affairs. Even by us lessons are to be learned from the history of their proceedings. In the convulsions which threaten Europe at the present day, should they ever occur, it is certain that the fleets just described will play a part worthy of the national positions of their respective peoples, and of the thoughtful care which has been bestowed upon their creation.

CLEOPATRA'S NEEDLE.

I.—*How it came to England.*

FTER the British troops, in conjunction with the Turks, had driven the French out of Egypt in 1801, an attempt was made to convey this remarkable monolith to England, but the effort was completely futile. In 1820, Mohammed Ali, then Governor of Egypt, intimated to the British Government his desire that the obelisk should be placed at the disposal of our country, but the previous unsuccessful effort to remove it was so fresh in the public mind that the attempt was not renewed. Last year, however, the offer was again made by the present Khedive, and on its being accepted, Mr. John Dixon, C.E., and Professor Erasmus Wilson, undertook with official sanction to have the Needle transported to this country. It is said that Professor Wilson agreed to contribute £10,000 towards the cost of transportation, and that Mr. Dixon took upon himself the responsibility of getting it over and any further outlay which might be necessary for the purpose.

At the Thames Iron Works, an iron vessel, specially designed by Mr. Dixon for conveying the Needle, was built, and was sent out in separate pieces to Alexandria. There the parts were fitted together around the Needle as it lay on the ground, the soil being dug away from underneath one section at a time, to enable it to be enclosed. When completed, the transporting vessel, with the obelisk inside, had the form of a cylindrical pontoon, 92 feet in length and 15 feet in diameter. It was fitted with a rudder at the

stern, and the bow was eased off as much as was possible. The cylinder consisted of eight water-tight compartments, separated by strong bulkheads through which the Needle passed, resting on large beams of wood placed athwart-ship between the opposite bulkheads. The fore and aftermost compartments were rather more than half filled with concrete as a precaution against capsizing. The weight of the Needle is upwards of 180 tons, and the *Cleopatra* was registered as being of 700 tons burthen.

When the various sections of the vessel were fitted and strongly riveted together, she was rolled along a prepared roadway to the sea and safely launched, after which she was fitted with a deck-house, mast, bridge, and other arrangements necessary for navigating her.

On the 21st September last the *Olga* steamer took her in tow, and the two vessels proceeded satisfactorily at a speed of about seven knots until the 14th October, when, in the Bay of Biscay, a violent gale was encountered, and those on board the *Cleopatra* signalled for assistance on account of some iron rails, which were carried for ballast, breaking loose, through a heavy sea striking the vessel and sending her on to her beam ends. A boat's crew was sent from the *Olga*, but failing to get on board the *Cleopatra*, the boat and its crew drifted away to leeward, and were never again seen. The *Olga* remained by the *Cleopatra* until the following morning, when in response to further urgent signals, another boat with difficulty was sent to take off the crew of the *Cleopatra*, as it was feared she was foundering. It was not until then that those on board the *Olga* became aware of the failure of the first boat's crew to reach the *Cleopatra*, but on learning the sad news the *Cleopatra* was left to take care of herself, and the *Olga* went to seek for the missing crew. The search proved entirely unsuccessful, and when the *Olga* returned to where she had left the *Cleopatra*, the obelisk ship could not be found. It was then concluded that she must have foundered, and the *Olga*, therefore, made her way to Falmouth.

Mr. Dixon, however, did not believe that she had gone down, and shortly the news arrived that she had been picked up in the Bay of Biscay by the steamer *Fitzmaurice*, and towed into Ferrol

Bay. Here she was kept for some little time pending the settlement of an awkward question of salvage, until arrangements were made with Messrs. Watkins, the well known tug owners of London, to bring the vessel to England. This has now been satisfactorily accomplished, and both Mr. Dixon and Professor Wilson have made the nation their debtors by the generous and public-spirited action taken by them in regard to this valuable relic of ancient days.

She was finally towed to her present place, and was accompanied in her way up the Thames by a representative of the City of London, by the Master of the Shipwrights' Company, and by the Right Honorable the President of the Board of Trade, Sir Charles Adderley, K.M.G., M.P.—an unostentatious gathering, it is true, but still one particularly appropriate, as symbolical of the first city of the world, and of the commerce and Mercantile Marine of the chiefest of the commercial and maritime countries of the time.

II.—*What it is.*

The Needle is a single block of granite. Its height is 68 feet 6 inches, the four sides of the base are about 7 feet 6 inches to 7 feet 10 inches, and the 4 sides at the smaller end are about 4 feet 6 inches, and from thence rises the pyramidion terminating it.

Before the time that Jacob was bartering for Esau's birthright for a mess of pottage, which the authorised version tells us was B.C. 1760; well, about 200 years before that, thousands of men were at work in the quarries of a place called Syené, on the southern borders of Egypt, and they were employed in cutting out a huge block of granite, which, when finished, was set up at a Temple, in a place called On. It was there in those early times that God the Father Almighty, Creator and Preserver of the Universe, was worshipped under such of his attributes as were at that time deemed by the priesthood of Egypt to be best typified and made clear to the people by the visible Sun. The Sun was the visible token of the existence of God, but was not deemed to be God; and the "pillar" was then His emblem with Jews and Egyptians. It has never

been proved that the learned men of Egypt, at that time, worshipped the pillar or obelisk any more than we Protestants worship a church steeple, which is the modern development of the same idea; or than intelligent Romanists now worship a cross, or an image, or a picture, or a shrine. They worship at it, and before it, but they do not worship it. Six of these pillars or obelisks were placed about the Temple of On, or Heliopolis, the City of the Sun, and one of them stands there at this day, as the writer of this can testify. The first pair removed from On were taken from their pedestals there, and conveyed to Alexandria, and set up at the entrance of a Temple built in honour of the Cæsars. This was not until they had stood for 1,800 years at On. It is not because Cleopatra had anything to do with the original setting up of the Needles that the pair removed to Alexandria were called Cleopatra's Needles; the name of that dissolute and wanton Queen is associated with them simply because it is surmised that she had or may have had something to do with suggesting their removal from On. The one now lying near the Thames Embankment having been brought from Alexandria to London in the reign of Her Most Gracious Majesty Victoria (whom God preserve) may better be known hereafter as "Victoria's Needle," for Her Majesty has had more to do with it than Cleopatra, who was dead before it was removed to Alexandria, ever had.

"Cleopatra's Needles" were removed from On to Alexandria just twenty-three years before the time known amongst Christians as A.D. 1, that is to say they were set up at Alexandria during the reign of Augustus.

We must always show great consideration as regards early dates, and not doubt facts simply because we cannot connect them with precise dates. Unless we show fair consideration in this respect we shall be undermining our own faith; for, although we speak of A.D. 1 or A.D. 1878 as if the date of the birth of the founder of the Christian religion were a registered fact, the real truth is that a miracle of the Romish Church was found to be necessary to discover it, and very fortunately that miracle came to pass and the matter was settled by it once for all. Had it not been, however, for that miracle, Christmas-day

could never have existed as a known day marking a known event, and, therefore, all Christians, whether Romish, Protestant or Dissenting, are under an eternal obligation to the Romish Church, and must of necessity ever cling to their belief in the miraculous and its exceeding efficacy. Had the day never been fixed it would have made no difference in faith or morals.

As regards the monoliths, we know, however, sufficient to enable us to assert that for 1900 years after their first removal they remained at Alexandria as Cleopatra's Needles near the Nile. Let us hope that this one may stand for another 1900 years as Victoria's Needle, near the Thames. It is not, however, yet set up in London, but lies in its needle case in the river, between the "Temple of Talk" and the "Temple of Healing."

An inscription on "Victoria's Needle" is said to be as follows :
 "The Horus, the Powerful Bull, beloved of the Sun, the King of the south and north Men-khaeper-ra, his father Tum has set his name up to him in the precinct in the palace attached to An or Heliopolis, giving him the Seat of Seb, the dignity of Khepera, the Son of the Sun Thothmes, true ruler, beloved of the Bennu of An ever-living." It reads rather as a jumble to the uninitiated; but three things are quite plain, first that the obelisk was set up by Thothmes, and secondly that it was set up by him near the Temple of Heliopolis, and thirdly that it was set up in honour of the Almighty Creator and Preserver by a King calling himself the Son of the Sun and other flattering epithets.

Thothmes, who originally set up this obelisk, was one of the Pharaohs of Egypt, and scholars are for the best part of opinion

* "The Horus" means also "The Rising Sun." "Re," "Ra," or "Abn," means "The Midday Sun." "A-tum-re" means "The Setting Sun." "Seb" means "Time," and "Bennu" means "The Sacred Bird," or Phoenix; and "Khepera" means God in His attributes of "Osiris," as symbolized by the Scarabeus. It is a very remarkable coincidence that this monument, set up to a King who was flatteringly termed "the Rising Sun," the son of the "Ever Living," should in almost precise words apply the same adulations to that King, whoever he was, as the translators of the version of the Holy Scriptures now in use in the reign of Queen Victoria (whom God preserve) applied to King James. These words will be found further on.

that he was the Pharaoh in whose reign Joseph died. We do not of course refer to Joseph, who was the father of Jesus, and who went into Egypt for safety, and came away when danger had passed away : but to the older Joseph who was sold into Egypt by his brethren, and who eventually became prime minister of the land.

And now we must ask our readers to approach the consideration of the story and associations of this wonderful relic with due humility and reverence. There is everything in it to confirm the accuracy of parts of the Sacred Scriptures. There is not one of our readers who, in his infancy, has not read and perhaps wept over the Bible narrative of the sale of Joseph, and of his subsequent prosperity and noble conduct to his brethren. Let our readers then realise this fact that that very Joseph, and those brethren, and the Pharaoh of the narrative that has delighted and harrowed, and will continue to delight and harrow English infancy, gazed on and stood in the shade of the very stone now in the Thames. And not only this but Joseph himself was a serving boy in, and married the daughter of the priest of the very Temple before which that stone was first set up. The Holy Scriptures tell us that he married "the daughter of Potophera, priest of On."

The worship of birds and beasts came at a later day, and whatever it may please the so-called religious world of to-day to say in the way of abuse of the "idolatry" of the Egyptians, one thing is certain, and that is, the holy Joseph, a Hebrew of the Hebrews, an accurate judge of all matters relating to his own God, found it to be not inconsistent with his own religious convictions to marry the daughter of a priest who worshipped the same "Ever Living" God under another name, but before the identical symbol that Israel himself had worshipped Him. No Christian will accuse Jacob of being an idolater. Knowing then that he was not an idolater, let us refer to what he did. Jacob was one of the few blessed mortals who had several personal conversations with the Lord, the God of all Jews and Christians. When Jacob was wandering and lay down to rest, the Lord spake to him in his sleep by a dream, and a most momentous message the Lord delivered. All believers in the Sacred Scriptures acknowledge that the

promise made unto Jacob by God Himself, is one of the sacred and most lasting foundations on which the Bible scheme, both Jewish and Christian, rests. Now it is only to be supposed that on such a momentous, such an awful occasion, Jacob would worship the Lord God in the proper manner, and if before any emblem, before the proper and only one. A modern Romanist would on such an important occasion improvise a cross, or an image, or picture of the Virgin, and would worship before it, and might be all wrong when he had done so, for God has never, by his own lips, expressed approval of such a proceeding; but this cannot have been the case with Jacob, who was one of the foundations of the whole edifice on which religion rests. God had just promised Jacob that "his seed should become as the dust of the earth," and had made what is known as a "promise." Jacob being out in the open had no means of worshipping at a shrine, so this is what he did: "He took the stone that he had for his pillows and he *set it up for a pillar*, and poured oil on the top of it;" and he vowed a vow, &c., &c. (Gen., c. xxviii., v. 18, *et seq.*) He worshipped God before the emblem that was deemed to be right by him, and that is translated as "a pillar." The pillar is to this day, amongst certain Hindoos, the emblem before which they worship God as typified by the Sun. And the very word in the original Scriptures, "metsevoth," is the word by which Jews of this day call a memorial stone.

That the Lord God Himself at that time accepted the set up stone or Pillar as a proper emblem or token of Himself, is proved also on the authority of the Sacred Scriptures (Genesis, c. xxxi., v. 13), for God subsequently said to Jacob, "I am the God of the House of God, where thou anointedst the pillar, and where thou vowedst a vow unto me." This was according to the dates on the authorised version of the Scriptures, 1739 years before A.D. 1.

Another very interesting point in connexion with this pillar, which we will call Victoria's Needle, is that it was the work of the hand of man before the Lord our God had declared Himself to man as Jehovah: and when Satan was yet walking on the earth. Our readers may ask how do we know this? Our answer is on the authority of the word of God Himself. Moses, who

wrote after the death of Joseph, and to doubt whose inspired word is regarded by true believers as rank impiety, Moses tells us that God spake in these words: "I appeared unto Abraham, unto Isaac, and unto Jacob by the name of God Almighty; but by the name of Jehovah, was I not known to them" (Exodus, c. vi., v. 8). According to the dates in the authorised version, this was 1491 years before A.D. 1: and according to Job (ch. i., v. 7), Satan was "walking upon the earth" at the date given in the authorised version as about 1520 years B.C. Let us grasp this closely; this very obelisk, this Victoria's Needle, was set up to the "Ever Living God" at the Temple of *On* or *An*. Joseph actually ministered in that Temple, and this was at the time that the Lord our (present) God had given His own appellation to man as God Almighty, and before He had informed Moses that He was Jehovah, and before Moses knew His name, and while Satan still walked upon the earth. What a valuable relic of true religion, as well as antiquity, what a valuable Mentor is this wonderful "pillar."

That at the date fixed by the Scriptures (authorised version), as 1491 before A.D. 1, Moses himself did not know the name or appellation of the God of Israel, is clear from Exodus iii., v. 18, for "Moses said unto God, behold, when I come unto the children of Israel, and shall say unto them, the God of your fathers hath sent me unto you: and they shall say unto me, what is His name? What shall I say unto them?" And well might Moses ask this, seeing that he had been also brought up in the Temple of *On*, where he would only be acquainted with the name of "Ever Living God" as common among the Egyptians.

But still further, we must intercede on behalf of this stone, lest the unthinking, and the frivolous should ridicule the inscription, which begins, "The Horus, the powerful Bull, the Son of the Sun." Before they do so, let them refer to their Bible, and note how many human and animal attributions and propensities are attributed even to Jehovah; and under how many types and likenesses He (the great "I Am") is referred to; and further, let the reader ask himself if he has never met, even in the present enlightened year, 1878, with such pious and fervent inscriptions as the following, which we insert in no spirit of irreverence, but merely as in-

stances of fervent, and at the same time symbolical, language amongst persons noted for religious belief and piety in our age :—

“The Lamb of God.”

“Ye shall eat of His flesh and drink of His blood.”

“Hail Virgin Mary, Mother of God.”

Or the following :—

“The Lord Spiritual, His Grace, the Right Reverend Father in God, the Lord” (Archbishop, or Bishop, as the case may be.)

“I was made a child of God.”

“Whereas it was expected that upon the setting of that *bright occidental Star*, Queen Elizabeth, of most happy memory, some thick and palpable clouds of darkness would so have overshadowed this land that men would have been in doubt which way they were to walk, the appearance of your Majesty (James I.) as of *the Sun in his strength*,” &c. &c. “Their eye doth behold you with comfort, and they bless you in their hearts as that *sanctified person*, who, under God is *the immediate author of true happiness*.”

In true reverence and in real candour, then we say that it was no more irreverent for Thothmes to speak of the Almighty or of himself typically, as a “powerful Bull,” than it is for us to speak of Jesus of Nazareth as “The Lamb,” or of Mary the mother of a numerous family on this earth, as a perpetual Virgin, and as the “Mother of God,” or of a Bishop as a Lord and a Father in God; or of weak-kneed James as a sanctified person, and to refer to him as “the Sun.” Nor was it more wicked to sculpture bulls as typical of the attributes of the Deity in the old time, than it is to sculpture or paint lambs and flags, or doves, or virgins, as typical of Deity now. The people and the King who set up this pillar at On, no more believed that the “Ever Living” God was a Bull, or like a Bull, or that a Bull was the Deity, than we believe that the Everlasting Son is a Lamb, or is like a Lamb, or that a Lamb is the Everlasting Son.

If 2,000 years hence the religion of the people of this present reign of Victoria is to be judged by its carvings on our temples and churches, it will be asserted of us that we worshipped lambs, bulls, men, women, children, and birds; and not only that, but angels, devils, and griffins, whose description and attributes will defy

mythology. And further, if we are then to be judged by our creeds and religious books of this period, it will be said of us that our religion is partly a worship of man, partly of God, partly pagan, and partly devilish, as it is one in which the introduction to our word of God speaks of a Queen as a Star, and King as the Sun, and in which persons of one sect habitually consign the others to everlasting torments while declaring themselves children of God. Let us always bear in mind that sculptures on walls may be symbolical, poetical, or fanciful, where they are not intended as records; that words are figurative and symbolical; and that many peoples, and all civilized peoples are, in their actions and mode of life, always more reasonable, merciful, tolerant, and human, than their religious creeds, if judged literally, as the inscriptions on the obelisks are taken, would make them appear to be.

The truth is probably this. The founders of religion did not intend to bewilder, but merely wished to express attributes by familiar objects, and to typify the triple power, creation, preservation, and annihilation. *This in fact is the ultimate human comprehension of the Deity even now.* Brahma, Vishnu, and Siva represented creation, preservation, annihilation. Matter, space and time. The separate attributes of the Deity as thus personified, in time ceased to be taken as figurative and came to be looked on by the people as personal, or as distinct persons. Then came a difference of opinion as to which person was the first, and a division into sects followed. Just as lately the Pope introduced a dogma that he was infallible, and that the mother of Jesus (and of His brothers and sisters) was still a virgin: so ages before the time of the older Joseph and the obelisks, the followers of Siva had introduced a dogma that although change takes place in matter, "matter is eternal," and change is brought by "force"; and creation the result. There was in that time, long passed away, even as there is now, a "Trinity," but the old Trinity was not God, and did not make up God. It was meant to show the attributes of Him and His creation, that is to say, "space, matter and force." Force was deemed to be masculine, matter feminine, and creation was deemed to be the result of their union. Some religious systems took the attributes and symbol for "matter," and its emblems as

typifying the Almighty. Other systems took those of "force"; and others took the union of the two. Men fell off and did worship beasts and reptiles, and were idolaters. This always has been the case, and always will be the case, where a church employs symbols and indulges in the splendours of ornamental rituals and pageants.

A little book is being sold along the Thames Embankment, the object of which is, by the means of the obelisk, to awaken the people to a lively sense of the blessings of the Christian religion, and to compare the debased state of Egypt with that of the blessed state of Christian countries. That is a very laudable thing to do: so we will say nothing about the destruction carried by the Russians into Turkey just now in the name of God the Father and Preserver, the mother of God, and Jesus the Son, because the proceedings of the Russians meet with the full approbation of many Christians. These proceedings are to end in inculcating the blessed Gospel of Peace. The author of the little book I refer to, wishes to show that all the learning and science of Egypt has perished because it was not founded in the Bible, and had not its basis in Christian truths; but this is rather hard, considering that much that is in the Bible is founded on the learning of Egypt, and that had it not been for Pharoah's daughter, the prophet Moses himself might never have been drawn out of the Nile.

The writer of the little book referred to (which is published by the Book Society, under the title of "Cleopatra's Needle: its wonderful History and Instructive Lessons") is good enough to inform his readers as follows, respecting Egypt:—He says, "Her Monarchs claimed to be descended from the Sun, their principal God; but unlike the Sun they shed no light; their monuments convey to us no information of any value. They teach us nothing that can tend either to enlighten the mind or improve the heart. The whole of the literature bequeathed to us by those Egyptian Kings is comprised in what is written on their tombs, and what is it worth?" And he says further, "The Pharoahs of Egypt were ignorant and deluded idolaters." The above are statements piously published in the supposed interest of true religion, but like many statements they omit so much that is true as to amount practically to what is not

true. The truth is that for those early times, before Joseph went into Egypt, On was what Oxford and Cambridge together now are, a great seat of literature and science. Its priests were professors of literature art and science, as then known; and students and scholars flocked to listen to them from all parts of the then known world. Its magnificence was even then the admiration and envy of nations, and its enlightenment shone as the Sun. "There is no darkness but ignorance," and well may On have been called in that early dawn "the Temple of the Sun," for one of its chief objects was to dispel ignorance. It was in this Temple that Moses himself was trained and studied, for in no other way could he have been learned in all the knowledge of the Egyptians; and his mind may have been led up to a realization of truth, when contemplating the inscription on this very stone, which was a monument set up to the Ever Living God. Indeed it is a sacred inheritance. A monument to many Gods might have been made of many stones, a monument to a triune God might appropriately be of three stones in one monument; but a monument to the One only and Ever Living God was made by those ancients in one piece. The Egyptians have taught the world how to make the most appropriate and sacred of all monuments; one unlike anything existing in nature; and one that is not the likeness of any living thing, "either on the earth, or in the waters under the earth." This grand monolith was, and is a symbol of monotheism. No altar piece, no shrine, no sculpture, no painting, no "relic," is of the like value, for its antiquity, association, and genuineness. Bits of wood, rusty nails, chips, skulls, bones, rags, caskets can be "collected" and can be purchased in endless quantity, and may be associated, with the names of gods, or angels, or saints, and may be spurious; but here is a stone that defies disbelief. It is what it purports to be; its genuineness is self evident, it has an honest and not a mere sectarian history. It was contemporaneous with Israel and the Sons of Israel before the twelve tribes were a people, and with Cleopatra; and is now contemporaneous with Victoria, Queen of the Isles and Empress of India.

But when the writer of the little book issued by the Book

Society, tells his readers that the Monarchs of Egypt were ignorant and deluded, that they shed no light, and that the whole of the literature bequeathed to us by the Egyptian Kings "is what is written on their monuments and on their tombs," he does not mean what he says. We may, speaking roughly and with almost accuracy, say that Egyptian Monarchs, men who were worthy of the name, ruled for about 2,400 years, that is to say, from 2000 years B.C. to 400 A.D. This of course includes many changes of dynasty and of nationality. Now when we bear in mind that On was the seat of learning at the beginning, and Alexandria was the seat of learning at the end of that succession of Monarchs, and that (although the worship of the Egyptian had developed into polytheism and gross superstition, and into idolatry, just as certain sects of the Christian church have developed into polytheism, and what some persons call idolatry now) during the whole period named, Egypt was a seat of learning, and her Kings of whatever dynasty, or nationality, or religion were mostly pre-eminent as patrons of literature and science and art. It is not accurate to speak of them as ignorant and deluded, nor is it right to say their literature has bequeathed us nothing but inscriptions on tombs and monuments. The statement requires recasting, correction, and qualification. As it is made in the interests of truth it may as well be in the main true.

In speaking of the part Egypt has played in the advancement of the world, it may be well to mention that the learning and science of Egypt and its lost library, to which in value and importance that in the British Museum may some day perhaps approach, were ultimately destroyed in the then supposed interests of the Christian religion, and by one who spared no record lest haply it might prove that the earth was round, or some other equally inconvenient fact that might conflict with the statements made in the Scriptures. In short, the learning of Egypt did not perish, because it was false, but because it contained too much that was true; and because dogmatists were in the ascendant who knew that the truth and knowledge which that library contained and cherished would clash with the teaching of their church, which was that the writings of the Scriptures from those of Moses to those of John at Patmos, were in word

and letter true and final; and in their astronomy, geography, mechanics, physics, and natural history, the absolute word and letter of Jehovah. The library at Alexandria was destroyed wholly and solely in the then supposed interests of Christianity, and for the express purpose of stifling science. How, in the end, science is re-asserting herself is proved by the fact that the stone which shadowed Moses and probably Joseph, and as some say, Israel himself, has come to this country in an iron ship, that it was dragged by steam power; that the course of the ship was determined and kept right by astronomy and geometry; that its departure from Alexandria, and its loss and subsequent recovery, and its final arrival here were announced by electricity; whilst messages respecting it, and descriptions of it, have been communicated by the telephone.

When people are told a half truth, or are led to believe by a wide statement that we have inherited nothing from Egypt, except sculptures on tombs and monuments, they are misled. Writers either do know or do not know the facts. If they do not know the facts they ought not to write. If they do know the facts they ought to state them.

As regards ancient Egypt the following few dates, as collected from the best sources, are worth note. The flood happened 2,348 years before the Christian Era, and there is at Elephantine a calendar recording the heliacal rise of the dog-star 1,441 years before the Christian Era; the pyramids contain astronomical and metric records; glass blowing was practised; indeed, glass articles were made 1,550 years B.C., and, in architecture, the cornice was used in the 4th dynasty, which is believed to have commenced 3,427 years B.C.; a book was written on papyrus by one of that dynasty, and in this dynasty science had so far advanced that the notation of time, the decimal system of weights and measures, and the division of the year into 365 days, and into 12 months, had been effected by the Egyptians. The arch was used in building in Egypt 800 years before it was used in the sewers of Rome, and when we come to later times, that is to say only about 2,000 years ago, we find Ptolemy's work on the system of the heavens, a work only replaced by the Principia of

an Englishman, Isaac Newton. We find Euclid born in Egypt, whose books can never be superseded; and Archimedes, the inventor of the lever, and of the screw, those contrivances which, set in motion by steam, brought this Needle to England; these, as well as the burning mirror, must be classed amongst the discoveries of the Alexandrian School. To a discovery in the Alexandrian School the further discovery of the precession of the equinoxes is due, and the arguments of that school which went to prove that the earth is round could never be met and were therefore stifled; and ere the splendid results of science were almost annihilated by a Christian Emperor, the sounds of the fire engine of Ctesibius, the water clock of Appolonius, and the steam engine and double force pump of Hero, had awakened the silence of the halls of the library in front of which the Needle now on the Thames was standing.

The only other point we need now touch on is the English site upon which this wonderful monolith is to rest for another 2,000 years. A worse place could have been selected than the place where it is proposed to place it: but the proposed site is not the best. The Needle is a monument raised by the people who invented geometry, who marked out the earth geographically, who divided the year into its proper number of days, who gave names to constellations, whose place was the centre of civilization, and whose Temple or observatory, before which it stood, was the Temple of the Sun in his diurnal course, and the words the "Seat of Seb," engraved on this obelisk, mean actually the "Seat of Time." "Seb" was their impersonation of our present "Father Time." "Horus" was the "Rising Sun;" "Ra" was the "Mid-day Sun," and "Tum" was the "Sun at Midnight." All time is reckoned from the Mid-day Sun. No fitter place for it could be found than Greenwich which is the Temple of Victoria's Astronomer Royal, and is the place from which longitude and time are marked and reckoned over a great part of the civilized globe. The monument of Ra, to whose Cultus this monolith was first designed and set up, ought to stand in the one and only place in Victoria's dominions from which time is calculated. Greenwich is, in fact, the "Seat of Seb" for all our people.

BOOKS RECEIVED.

Ocean Currents and Atmospheric Currents. By Digby Murray, one of the Professional officers of the Board of Trade. London : Pewtress & Co., 15, Great Queen Street, W.C. 1878.

THIS ably written pamphlet will, we hope, give a stimulus to the study of meteorological science in the merchant service. It should certainly be in the hands of every seaman who desires to know the laws that regulate the movements of the elements above and beneath him. In a singularly modest and graceful preface, the author dedicates the pamphlet to his "brother seamen of the Mercantile Marine, hoping that it may be the means of calling their attention to a subject that must ever have a special interest for all seamen of intelligence." We think it cannot fail to realize the author's hopes. Its perusal is qualified to instruct the unlearned, and to whet the appetite of the student. Captain Murray's views of the subject are broad and original, and his language is vigorous and logical. There is an absence of prolixity in his style which renders it next to impossible to make a summary of his arguments without doing them injustice. We will therefore simply repeat Captain Murray's opinions on one or two salient points in connection with ocean circulation. Winds do not produce, although they may sometimes influence the course of the main ocean currents. Whenever water flows into the bottom of any ocean, or other basin, it must elevate and displace on the surface a body of water exactly equal to its own volume, which body of water will then run off in that direction in which it meets the least resistance. The primary cause of ocean currents is the change in the specific gravity of sea water, resulting from expansion by heat, or contraction by cold ; from the increased salinity produced by evaporation, or from the increased freshness produced by an excess of precipitation over evaporation. There is a constant disturbance of equilibrium from these causes, and the effort to restore and equalize it, produces the currents. The equatorial and polar currents are accounted for as follows :—The surface water in the equatorial regions is lifted by the influx beneath of cold, and therefore heavier, water from the Polar Seas. It then

flows off as a surface current, the portion of it flowing towards the North Pole being deflected by the N.E. trade winds, and obliged to flow through the Caribbean Sea and the Gulf of Mexico, and thence through the Gulf of Florida. This stream, estimated to be in the narrows about 32 miles wide, with a depth of 200 fathoms, and a velocity of 4 miles an hour, is uplifted on again reaching the ocean by a body of colder and heavier water flowing from the Pole towards the equator, thus acquiring the arched form described by Maury. It then extends laterally and becomes shallower, until off Hatteras its depth is reduced to 100 fathoms. Being now beyond the influence of the trade winds, the stream inclines its course to the N.E.* owing to the easterly momentum due to its northerly direction, and spreads itself over the sea. This warm stream has been giving out volumes of vapour during the whole of its westward course, and consequently becomes saltier and saltier, but in a much more rapid degree as the stream becomes shallower. Thus it flows on, becoming colder and heavier until it meets with Polar water, which, although colder is much fresher, and consequently of less specific gravity than itself, and it then dips beneath the surface and runs swiftly to the bottom of the Polar basin, whence it displaces a body of cold water which runs southward as a surface current, until it in turn dips beneath the Gulf Stream as already described. Our space does not allow us to follow Captain Murray through his interesting arguments and illustrations in support of this theory, but we may safely say that he assumes no position that he does not clearly establish, and when he differs from "authorities," he certainly does not appear to have the worst of the argument.

With regard to the close affinity which Captain Murray shows to exist between winds and currents, we venture to quote the following passage :—"There is a wonderful similarity between oceanic and atmospheric circulation. . . . If we wish to know how the

* The velocity of the earth's rotation decreasing as the stream flows northward, the momentum acquired at the equator appears to give the stream an easterly flow in high latitudes, and *vice versa*, a stream flowing from the pole appears to lag behind, as it approaches the equator and thus acquires a westerly direction.

N.E. trades and the S.W. winds pass one another in the upper regions of the atmosphere, let us question the currents of the ocean, and the Labrador current will suggest an intelligible reply. If on the other hand we want to know what is the system of ocean circulation, let us ask the currents of the atmosphere, and the Polar currents (*i.e.*, the trade winds) and the equatorial currents (*i.e.*, the westerly winds of the temperate zones) will strongly suggest to us the answer. It is quite true that there is no salt in the atmosphere, but there is instead vapour which plays as important a part in its circulation as salt does in that of the ocean."

We recommend this little pamphlet to the notice of all who are engaged in the study of ocean meteorology, or for whom the silent workings of nature have a charm.

Since the publication of this pamphlet, we have read a letter of Captain Murray's in the *Times*, calling in question the new vapour theory of Sir C. Wyville Thomson, of *Challenger* renown, to which letter no reply has, as yet, been made.

Thring's Criminal Law of the Navy, with an Introductory Chapter on the Early State and Discipline in the Navy, &c. By Theodore Thring, of the Middle Temple, Barrister-at-Law, late Commissioner of Bankruptcy at Liverpool, and C. E. Gifford, Assistant-Paymaster, Royal Navy. London: Stevens and Sons. 1877.

THIS is a compendious account of the law of the Navy for the use of naval men. A sea-lawyer, as we all know, is not a popular character; still the Navy has a little code of laws of its own which it behoves every intelligent sailor to understand. Mr. Thring and Mr. Gifford have put together the very sort of information which an officer anxious to know his duty would desire to have at hand. Mr. Gifford is responsible for the "Procedure, Naval Regulations, Forms, and all matters connected with the practical Administration of the Law." The Naval Discipline Act is printed in the appendix. The rest of the volume is a treatise in fifteen chapters by Mr. Thring, in which the whole subject is clearly and carefully explained. The introductory chapter supplies the historical information which is indispensable to accurate understanding of the law of the Navy. Mr. Thring traces the constitutional history of the

Naval Code in a most interesting way. Like the rest of the law of England it is by no means a thing of to-day or yesterday, and like many cherished portions of the constitution it is substantially the creation of the maligned statesmen of the Commonwealth. Of the legal chapters we need only say that they are written as law should be written when the readers are not lawyers, and the purpose is not litigation,—simply, concisely, and without any straining after technical accuracy and completeness of expression. The best are the chapters on the Relation of the Courts of Law to Naval Jurisdiction (c. xiv.), and on the Rules of Evidence (c. xv.) The former traces the course of legal decisions—chiefly relating to the Army, but embracing the Navy in their effect—down to the recent cases (*Dawkins v. Lord F. Paulett*, and *Dawkins v. Lord Rokeby*), in which the privileges of the tribunals of the service were recognised in the most ample manner. The last chapter explains the leading principles of the Law of Evidence, with no more detail than is required for the purposes of an unprofessional tribunal. We gladly recommend the book to officers of the Navy, and to lawyers who may be interested in proceedings before Naval Courts Martial.

Lyric Poems and Thoughts in Verse. By Rear-Admiral J. R. Ward (Third Edition). London: E. Moxon, Son & Co.

We cordially greet the appearance, in the brightest of bright forms, of another edition of Admiral Ward's poems; not only because we think the book deserves its evident success, but also because it tends to show that the public still appreciate verse which, while graceful in form, is, at the same time, thoroughly healthy in character, and intelligible to ordinary readers.

The author, in his preface, expresses a modest hope that his strains may impart to others some portion of the pleasure he has found in their composition, and his aim is still expressed in a stanza in which, speaking of mighty poets, he says:—

“ Their world-wide fame I seek not, nor aspire
To emulate their spirit-stirring lays,
And wake a sleeping world with thoughts of fire;
My muse, of humbler note, seeks lesser praise,
Contented if it may but serve to cheer
A poor and sorrow-laden mortal here and there.”

That these aspirations are not only fulfilled, but exceeded, there can now be no question, and we have little doubt that a perusal of the volume before us will prove as pleasant to our readers as it has been gratifying to ourselves.

House Flags of the Mercantile Marine and Yacht Flags. London: R. H. Laurie. 1877.

WE are glad to see a fairly successful attempt to show the distinguishing flags of shipping firms. Some years ago, feeling the great need of such a publication, we endeavoured to bring out a similar, but somewhat more comprehensive work; but failed to obtain the requisite information from shipowners. The broad sheet now before us is very well produced, and shows the distinguishing flags of upwards of 180 shipping firms and companies, besides a great number of yacht flags, which will be of interest to those concerned. The price is half-a-crown, which appears to be dear, but it must be remembered that coloured diagrams are expensive things to produce, and that the circulation of such a publication must necessarily be limited.

Wellbank's Australian Nautical Almanac and Coasters' Guide. 1878. Edited by S. S. Sustenance, Marine Surveyor. Sydney: Jas. Reading & Co.

THIS useful work appears to be as full of information as usual. It is undoubtedly an invaluable book of reference for Australian Coasting Navigators.

Rule of the Road at Sea. By Thomas Gray. London: J. D. Potter. 1878.

THIS little book is of the greatest value just now, as it puts before the reader all the existing rules and the proposed additions. It is illustrated with 50 figures and drawings. When Mr. Gray chooses, he writes so that he cannot be misunderstood, and his last book is in his best style. It ought to be in the chest of every sailor boy, and on the shelf of every lawyer.

OUR PARLIAMENTARY RECORD.—SESSION 1878.

In the House of Commons, on Monday, January 21st, 1878, Mr. WHEELHOUSE asked the President of the Board of Trade whether he was aware that in consequence of Section 27 of The Mercantile Marine Act, 1850 (13 and 14 Vic.), not having been re-enacted by The Merchant Shipping Act, 1854, those master mariners and mates who, having by voluntary examination received certificates of competency from the Trinity House, and who, either from absence abroad, or from other circumstances, had not, prior to the passing of the Act of 1854, exchanged their Trinity House certificates for the Board of Trade certificate of competency under that statute are not, although they may still possess their antecedent "certificates of competency," any longer permitted, as they previously were, to command vessels chartered by the Crown for the conveyance of troops, prisoners, mails, Government stores, &c.; and, if he finds such to be the case, he will endeavour to replace such "certificated masters" in the position they formerly held in reference to such command.

Sir C. ADDERLEY said: By the Mercantile Marine Act of 1850, the Board of Trade granted certificates of competency to masters and mates who had certificates under the previous voluntary system. The Merchant Shipping Act, 1854, did not continue this power, and certificates of competency could only be granted on examinations by Local Marine Boards. Two thousand six hundred and ten persons had the old certificates, of whom 540 did not get them exchanged for Board of Trade certificates before the power to do so had expired in 1855. If any of these survive and want certificates now, they can get certificates of service which are equally valid at law for merchant ships; and if not accepted for vessels conveying mails or troops, that is a matter of regulation or arrangement of owners, and nothing to do with the law of certificates.

On the same day, Mr. WHEELHOUSE asked the President of the Board of Trade, whether he was aware that the Government of the United States taxes the owners of American merchant ships who

employ aliens as masters and mates of such ships, while American subjects (in common with all other aliens who can obtain the Board of Trade certificate of competency as master or mate) are now permitted to command and serve on board British ships, either in the Foreign or Coasting trade, without any payment whatever; and whether some remedy cannot be devised and put into operation for a more equitable arrangement between the two countries in this matter?

Sir C. ADDERLEY said: Any one, irrespective of nationality, can be master or mate on board a British ship who obtains a certificate of competency. Masters and chief mates of United States' ships leaving United States' ports must be citizens, and in case of a vacancy abroad, aliens can only be appointed temporarily for the voyage, subject to report on arrival. I am not aware of any tax or fine on owners of American ships employing aliens, but they cannot do it legally.

On the same day Mr. MACCARTHY asked the President of the Board of Trade, if his attention has been called to the insufficiency of the shelter provided for deck passengers in steamers plying between Ireland and Great Britain, and the fact that even women and children are sometimes exposed during long winter nights to the inclemency of the weather; and, if so, what steps he proposes to take in order to remedy this evil?

Sir C. ADDERLEY said: My attention has been called to the subject, and I will lay the report of the department and consequent instructions immediately on the table. They are chiefly with a view to more necessary accommodation and separation.

On the same day Sir C. ADDERLEY, in moving in a Committee of the whole House for leave to bring in a Bill to Amend the Laws relating to Merchant Seamen, said that by the proposed Bill it was intended to redeem the pledge given by the Government that they would endeavour to deal with seamen in two directions. They wished, in the first place, to introduce seamen as far as possible into the provisions of the Acts passed in 1875, namely, the Employers and Workmen Act, and the Conspiracy Act; and, secondly, to consolidate the laws relating to the discipline of seamen. The principle of the two Acts of 1875 was that the relation between workmen

and their employers should be one of contract, and that breach of contract should not be treated criminally. The Conspiracy Act repealed several laws which had made breach of contract criminal, and also relaxed to a great extent the law of indictable combination, but breach of contract between workmen and employers still remained criminal if it was malicious or wilfully and knowingly such as to endanger life. The Employers and Workmen Act brought disputes under the jurisdiction of the County Courts, and gave them power either to adjust the difference, or to rescind or enforce the contract. The Bill proposed to put seamen altogether under the operation of that Act until they joined the ship, abolishing arrest without warrant up to that point. On board ship, however, the state of things necessarily altered. The master was responsible for the ship, the cargo, and the lives of all on board, and required sufficient authority to meet the emergencies and vicissitudes of the voyage. The exercise of his power was necessarily unlimited, except in so far as he was restrained by the possibility of an action being brought against him for using it in an unjustifiable manner. That this unlimited power should exist appeared to him perfectly legitimate. He believed, indeed, that so far from being relaxed, the present regulations of discipline at sea ought in some respects to be made. It also contained important clauses in reference to the payment of wages, which would enable the seaman to make his way home soon after his arrival in port, instead of hanging about the port, to his great detriment, for several days until he was paid off. By clause 26, the Bill proposed to strengthen the law with respect to crimping. (Hear, hear.) The clause was introduced at the suggestion of Mr. Boyer and others, and by making the penalty severe against crimps boarding vessels just arrived, would, it was hoped, put down an evil which existed to a great extent at most of our ports.

Mr. NORWOOD regarded the proposed alterations of the law as being not only important, but serious in their character. The right hon. gentleman said that conditions of servitude of the seaman and workman on shore were not similar. The relations between the two services were anything but parallel, and to attempt

to deal with them as if they were so, would be to legislate in fallacy.

Mr. E. SMITH said : That hon. members had heard a great deal about freedom of contract, but it appeared to him that the tendency of this measure was to confer freedom of breach of contract. He was, however, willing to give his assent to the principle of the Bill if the measure were referred to a Select Committee.

Mr. E. STANHOPE, Parliamentary Secretary, said : The Government were prepared to refer the Bill to a Select Committee, and hoped the House would assist them to do so as early as possible.

The resolution was agreed to, and leave was given to introduce the Bill. The Bill was subsequently introduced and read the first time.

On Thursday, 24th January, 1878, Mr. PLIMSOLL asked the President of the Board of Trade when inquiries would be held into the causes of the loss of the steamship *Wells*, the steamship *Kinshan*, and the steamship *Rose*, all of which vessels have been lost with all hands ?

Sir C. ADDERLEY said : I gave all possible information about the loss of the *Wells*, in answer to the hon. member for Stafford, last March. Nothing has transpired since, nor could be expected. As regards the *Kinshan*, I am communicating about her. She left Cardiff last October with coals for Bombay, and has not been heard of since. As regards the *Rose*, she disappeared after passing Copenhagen, December 20th, bound for Revel, and no evidence can be obtained as to the cause of her loss. She had a cargo of iron bridge-work, not excessive for her tonnage.

On Thursday, February 7th, 1878, Mr. GOURLEY asked the President of the Board of Trade what measures he intended adopting for the purpose of preventing the conveyance, either by sea, canal, river, or rail, unless in properly constructed magazines, of gunpowder, dynamite, and other dangerous goods, such as were proven to have been shipped on board the *Great Queensland* without a magazine ; and, further, what regulations he intended imposing upon the Conservators of the Thames, and other rivers, whereby they may be compelled to exercise efficient supervision over the storage, conveyance, and stowage of combustible goods.

Sir C. ADDERLEY said : I have twice already stated to the House in answer to the hon. member, that I consider the law providing for the proper loading of explosives is sufficient. I am communicating with harbour authorities with a view to induce them to obtain notice of every ship loading with explosives in their jurisdiction, and to communicate any case of suspicion to our inspecting officers. The hon. member may, if he likes, move for a copy of any set of bye-laws which are all approved by the Board of Trade, such as those of the Thames, Mersey, or the Tyne, and of the model bye-laws as to carriage of explosives which are applied, under sanction of the Board of Trade, to all inland waters and railways in the kingdom, and it will be seen that there is no deficiency of law on the subject.

On Friday, February 8th, 1878, Sir COLMAN RASHLEIGH asked the President of the Board of Trade, if he could state under what clause, or regulation, in the Merchant Shipping Acts, 1854 and 1876, or by what authority, did the Board of Trade (without giving notice of survey to the owners) send their principal shipwright surveyor to Hamburgh, and did there cut up and injure the British sailing vessel *Calenick*, of the port of Fowey, Cornwall ; and, if such survey was not unlawful, and contrary to the laws of this realm, the said vessel being in foreign waters.

Sir C. ADDERLEY said : The *Calenick* was abandoned at sea and brought by salvors into Hamburg. The Board of Trade thereupon instituted an enquiry as to the abandonment, and the Wreck Commissioner adjourned the inquiry that the owner might employ counsel, and that a survey of the ship might be held, which, with the knowledge, and without any objection on the part of the owner, the Board instructed their principal shipwright to undertake. The ship was tested not cut up. Section 14, of the first of the two Acts, which the hon. member rightly refers to, will make it clear to him that there was nothing done unlawfully.

SHIPBUILDING, 1877.

Name of Port.	SAILING SHIPS.				Gross Tonnage 1876.
	No. of Ships 1877.	No. of Ships 1876.	Gross Tonnage 1877.	Gross Tonnage 1876.	
Aberdeen ...	7	11	4,412	6,565	
Banff ...	14	11	2,415	2,035	
Barrow ...	6	6	2,124	2,651	
Belfast ...	8	5	9,848	4,189	
Bristol ...	8	2	614	246	
Cowes ...	7	7	254	308	
Dartmouth ...	59	87	4,494	2,754	
Dundee ...	8	17	5,281	11,577	
Faversham ...	26	23	1,194	1,215	
Glasgow ...	52	78	54,489	68,445	
Greenock ...	7	15	6,049	9,567	
Grimsby ...	46	80	8,486	2,575	
Hartlepool ...	2	8	2,740	3,450	
Hull ...	48	26	3,801	2,048	
Jersey ...	9	10	525	701	
Liverpool ...	25	33	23,035	23,591	
London ...	32	21	1,647	1,184	
Lowestoft ...	17	9	541	285	
Middlesbro' ...	4	9	3,089	9,184	
Newcastle ...	1	3	83	1,750	
Plymouth ...	13	27	848	2,303	
Port Glasgow ...	8	24	10,674	23,339	
Portsmouth ...	10	10	848	1,270	
Rochester ...	21	16	966	685	
Rye ...	21	18	1,129	823	
Southampton ...	15	15	11,175	5,856	
Stockton ...	8	1	3,146	1,485	
Sunderland ...	32	42	82,152	30,048	
Whitehaven ...	4	8	8,424	4,783	
Workington ...	2	8	1,884	1,618	
Yarmouth ...	42	25	1,817	1,109	
Other Ports ...	177	179	19,187	23,704	
Totals	724	719	216,261	251,838	

SHIPBUILDING, 1877.

STEAMSHIPS.

Name of Port.	No. of Ships 1877.	No. of Ships 1876.	Gross Tonnage 1877.	Gross Tonnage 1876.
Glasgow ...	85	83	64,439	64,978
Greenock ...	15	15	9,621	8,186
Port Glasgow	18	28	7,678	13,826
Sunderland	50	21	69,287	23,276
Newcastle ...	58	45	76,039	41,471
North Shields	10	19	2,045	1,588
South Shields	24	20	9,801	3,346
Liverpool ...	13	15	14,068	14,321
Dundee ...	12	5	6,941	5,482
Hartlepool ...	23	13	34,535	13,254
Aberdeen ...	4	6	3,085	2,605
London ...	12	22	840	4,850
Belfast ...	1	1	55	497
Stockton ...	6	2	9,051	1,034
Middlesbro'	22	11	23,875	12,287
Hull ...	3	3	5,874	1,702
Leith ...	2	2	216	219
Boness ...	1	2	77	84
Barrow ...	12	2	13,499	1,029
Whitby ...	5	4	7,071	5,456
Southampton	4	8	2,124	981
Other Ports	25	21	3,065	1,683
Totals :—	—	—	—	—
Steamships	405	348	363,286	222,155
Sailing Ships	724	719	216,261	251,338
Grand Total	1,129	1,067	579,547	473,493

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all enquiries should be addressed.

201. Alexander Nicol, Lewisham. "Improvements in ships."

292. James Yates, Rotherham. "Improvements in the manufacture of armour for ships, forts, and other purposes."

258. Thomas Hampton, Sheffield. "Improvements in the manufacture of armour plates."

282. Inyers Coryelle, New York. "An improved condenser for the engines of steam launches, steam yachts, and other vessels."

283. Robert Smyth, Dunning, N.B. "Improvements in the construction of screw propellers for ships or vessels, and in fittings connected therewith."

293. James Adams, Perry Bar. "Improved apparatus for the removal of saliva, the drip from umbrellas, and other matter, in railway and other carriage rooms, and ship cabins; also for ventilating the same."

329. Captain Robert Bain, Gibraltar. "A new or improved course corrector for steam and sailing ships."

366. James Rodger Thomson, and John Parker, Engineers, Glasgow. "Improvements in marine steam engines, and in the arrangements of mechanism for governing the same."

378. George Frederick Heyl, of Charlottenberg, Germany. "Improvements in compositions for protecting ships' bottoms, and other submerged surfaces."

388. Henry Whitehead, Elton, near Bury. "Improvements in the construction of armour plating for vessels of war, which invention is also applicable for the protection of forts."

402. William Hale, Handsworth. "Improvements in and appertaining to propelling and steering vessels, which improvements are also applicable to raising fluids, and for blowing and exhausting purposes."

460. Edward Montagu Leeds, London. "Improvements in apparatus for disengaging boats from the lowering tackles."

475. Thorsten Nordenfelt, London, Civil Engineer. "Improved system of armour plating for forts and ironclad ships."

485. James Curtis and Charles Spencer Stewart, Middleton, Miss., U.S. "Improvements in apparatus for propelling vessels, applicable also for other purposes."

501. John Thomson Stocks, Kirkcaldy. "An improved screw propeller."

528. Baptiston Carmagnolle, Marseilles, and Pierre Bonaventure Berlandier, of Barbentane. "Improvements in diving apparatus."

553. Josiah Latimer Clark and John Standfield, London. "Improvements in floating docks and pontoons."

565. Rev. John Harding Cole, Innishannon, Ireland. "Improvements in the construction of armour plates for ships, forts, and other structures."

607. Charles Fielder, Plumstead. "Improvements in apparatus for cleaning the hulls of vessels and other submerged structures."

609. Matthew Hutton Atkinson, Newcastle-on-Tyne. "Improvements in circuit closers for torpedoes."

623. Charles Ambrose McEvoy, Southwark. "Improvements relating to torpedoes."

ABRIDGMENTS.

2293. Luke Thomas, Bayswater. "Improvements in the mode or means of raising, lifting, or withdrawing the rudders, screw propellers, or rams of vessels from the water, when such parts are not in use." The rudder or propeller is attached to a disc in such manner that, by partly turning the disc, it is lifted out of the water, and can pass through a slot in the counter, if desired.

2294. Jacob Joachim Kunstädter, of London. "Improvements in the propulsion and steering of vessels." This consists in mounting a small screw in the rudder, or else employing the screw as the steering power, by connecting it to the shaft by a universal joint, so as to swing laterally.

2331. The Hon. Richard Clere Parsons, London. "Improvements in apparatus for propelling ships or vessels." The propeller, the blades of which are curved to helices, revolves in a circular casing, and against a conical fixed boss furnished with fixed blades, similar to those on the propeller boss, but reversed in position. The water from the propeller, rushing in a rotary direction, is cut by the fixed blades and delivered out of the casing quietly. A casing or fin on each side the propeller-case assists in keeping a body of water at all times against the propeller.

2351. Joseph Thomas Parlour, London. "Improved apparatus for protecting ships and fortifications against torpedoes, and for other like purposes." This consists of a peculiar hinged frame arranged to be easily lowered by rack and pinion, and serving to protect the submerged portion of the ship.

2380. Henry Studdy, Waddeton Court, Devon. "An improved apparatus for facilitating the adjustment of mats, sails, or the like, for covering holes or fractures caused by collisions or otherwise in ships' bottoms, which apparatus may also be used as a raft." A carriage, carrying rollers to run against the sides, is attached to a rope to be dragged under the bottom; behind the carriage, is attached a modern bar frame, connected by transverse ties, and fitted with friction rollers, the sail or mat being placed upon it.

2395. John Wm. Sadler, Glasgow. "Improvements in screw steamships or vessels, and in their propelling and steering mechanism." This consists in an arrangement of screw propeller coupled to the shaft by a ball and socket joint, and arranged so as to be raised and lowered. The propeller projects quite outside the vessel, and the chamber in which the shaft runs is open to allow water to flow to it. Two hinged rudders are used a little before the propeller, one on each side.

2418. Edwin Paul, Liverpool. "Improvements in steam winches." Consists in the application of a rope passing over a grooved pulley which is connected to a steam cylinder on the winch, so that on the revolution of the grooved pulley, the boom or jib (the guys of which pass over the said pulley), may be swung from one side to the other, for raising or lowering cargo. Steam pressure keeps the free end of the rope tight.

2507. Richard Lloyd, Paris. "Improvements in armour for protecting ships, forts, and other like purposes." This consists in using vertical armour plates arranged edgewise, fitted at top and bottom with serrations dovetailing into each other. The space between the plates is fitted in with timber.

2565. Hjalmar Arentz, Glasgow. "Improvements in apparatus or mechanism for cleaning ships' bottoms." This consists of a machine for being drawn under the ship's bottom, and carrying brushes actuated by on a hydraulic engine carried on it for brushing the bottom. Two of the frames are used, and are guided along the bottom by a traversing frame running on the keel.

2351. William Horatio Harfield, London. "Improvements in windlasses for working chain-cables and ropes." A purchase-wheel, running in bearings, carries two sets of nipping lever pawls, one set being placed above the other. Above these pawls is a vibrating crosshead, on a pin parallel to the windlass spindle. Upon this crosshead are two other pins carrying links, which are jointed to the long arms of the pawls. By vibrating the crosshead a rotary motion is given to the windlass. A friction break is described for acting on the chain-wheel.

AMERICAN.

197419. William D. Smith, Keithsburg, Ill. "Screw-propellers." Consists of a series of blades curved and set at an angle, and mounted on a revolving drum running on a shaft.

197437. James W. Whittaker, Philadelphia, Penn. "Screw-propellers." A screw-propeller, each blade of which presents on part of its working face a section of a true screw of one uniform pitch, and from the other part to the hub a section of a true screw of less pitch. The edges of the blades are rounded or sharpened from both sides.

197348. Joseph P. Dorr, jun., Indian River, Me. "Anchor trippers." A metal frame is connected to the cathead, carrying a pawl turning on a bell crank; an arm from the bell crank proceeds to a catch. On depressing the lever the pawl drops into the links of the chain, holding up the anchor; but on raising it the pawl raises, releasing the chain and letting go the anchor.

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2351. Joseph Thomas Parlour, London. "Improved apparatus for protecting ships and fortifications against torpedoes, and for other like purposes." This consists of a peculiar hinged frame arranged to be easily lowered by rack and pinion, and serving to protect the submerged portion of the ship.

2380. Henry Studdy, Waddeton Court, Devon. "An improved apparatus for facilitating the adjustment of mats, sails, or the like, for covering holes or fractures caused by collisions or otherwise in ships' bottoms, which apparatus may also be used as a raft." A carriage, carrying rollers to run against the sides, is attached to a rope to be dragged under the bottom; behind the carriage, is attached a modern bar frame, connected by transverse ties, and fitted with friction rollers, the sail or mat being placed upon it.

2395. John Wm. Sadler, Glasgow. "Improvements in screw steamships or vessels, and in their propelling and steering mechanism." This consists in an arrangement of screw propeller coupled to the shaft by a ball and socket joint, and arranged so as to be raised and lowered. The propeller projects quite outside the vessel, and the chamber in which the shaft runs is open to allow water to flow to it. Two hinged rudders are used a little before the propeller, one on each side.

2418. Edwin Paul, Liverpool. "Improvements in steam winches." Consists in the application of a rope passing over a grooved pulley which is connected to a steam cylinder on the winch, so that on the revolution of the grooved pulley, the boom or jib (the guys of which pass over the said pulley), may be swung from one side to the other, for raising or lowering cargo. Steam pressure keeps the free end of the rope tight.

2507. Richard Lloyd, Paris. "Improvements in armour for protecting ships, forts, and other like purposes." This consists in using vertical armour plates arranged edgewise, fitted at top and bottom with serrations dovetailing into each other. The space between the plates is fitted in with timber.

2565. Hjalmar Arentz, Glasgow. "Improvements in apparatus or mechanism for cleaning ships' bottoms." This consists of a machine for being drawn under the ship's bottom, and carrying brushes actuated by on a hydraulic engine carried on it for brushing the bottom. Two of the frames are used, and are guided along the bottom by a traversing frame running on the keel.

2351. William Horatio Harfield, London. "Improvements in windlasses for working chain-cables and ropes." A purchase-wheel, running in bearings, carries two sets of nipping lever pawls, one set being placed above the other. Above these pawls is a vibrating crosshead, on a pin parallel to the windlass spindle. Upon this crosshead are two other pins carrying links, which are jointed to the long arms of the pawls. By vibrating the crosshead a rotary motion is given to the windlass. A friction break is described for acting on the chain-wheel.

AMERICAN.

197419. William D. Smith, Keithsburg, Ill. "Screw-propellers." Consists of a series of blades curved and set at an angle, and mounted on a revolving drum running on a shaft.

197437. James W. Whittaker, Philadelphia, Penn. "Screw-propellers." A screw-propeller, each blade of which presents on part of its working face a section of a true screw of one uniform pitch, and from the other part to the hub a section of a true screw of less pitch. The edges of the blades are rounded or sharpened from both sides.

197348. Joseph P. Dorr, jun., Indian River, Me. "Anchor trippers." A metal frame is connected to the cathead, carrying a pawl turning on a bell crank; an arm from the bell crank proceeds to a catch. On depressing the lever the pawl drops into the links of the chain, holding up the anchor; but on raising it the pawl raises, releasing the chain and letting go the anchor.

197292. Dwight B. Rich, Boston, Mass. "Paddle-wheels." Consisting in applying to the periphery of the wheel a series of braces bolted from one bucket to the other, for the purpose of strengthening the wheel.

FRANCE.

118323. Pastor Perez de la Sala. "An improved raft and lifeboat." Applicable also as a military pontoon and for other purposes.

118474. Deschamps, jun. "A tidal motor."

118031. Faurie and Vaquié, of Bordeaux. "Oyster-beds, with protection from crabs and destructive molluscs."

118842. Fregon. "Improvements in vessels and boats, and in the steering apparatus."

118862. Oswald. "Improvements in the construction of armour-plated vessels and fortifications."

118873. Rawlinson. "Improvements in the construction of armour-plates."

118928. Lamouroux. "An improved ship's lantern."

118939. Defontaine. "Improvements in the construction of weirs and sluices of rivers."

118969. Messrs. Griffiths. "Improvements in the construction and working of armour-plated steam and other vessels."

119118. Lloyd. "Armour-plates for vessels and forts."

119345. Thompson. "Improvements in apparatus for retaining berths, cots, &c., aboard ship in a level position."

119359. Weyl. "A transport system, without lighters, for inland and sea navigation."

119380. Aleno, Paris. "Fishing-tackle, chiefly for fishing shrimps."

119392. Herembourg. "A moveable screw-propeller applicable to sailing vessels."

119413. De Villasante, Pellon, and Vaello. "Steam-boats with fish ponds."

119433. Arson. "Improvements in propellers."

119459. Rièber and Simmonau, Paris. "A hydraulic dredger for harbours and canals."

119487. Cambioggio and Leroy, Marseilles. "A system of illumination by glass globes containing water with a metallic product, for lighting ships and preventing collisions."

GERMANY.

5362. G. O. Topham. "A gimbal suspension for seats, couches, and berths for preventing sea-sickness."

BELGIUM.

43841. A. De Beaumont. "Improvements in screws, with moveable and navigable blades."

4400. Luke Thomas. "Improvements in the mode or means of raising, lifting, and withdrawing the rudders, screw-propellers, or rams of vessels from the water." .

AUSTRIA.

17. H. J. Cole Wandsworth, Esq. "Improvements in apparatus connected with cleaning the bottoms of ships and other submerged bodies." Secret.

99. W. Rawlinson Fallbarrow, Esq. "Improvements in the construction of armour plates." Public.

129. J. Weiss and Son, Vienna. "A universal compass." Public.

CORRESPONDENCE.

Owing to an unusual pressure on our space, we are compelled to postpone the publication of numerous letters from our correspondents until next month.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
47	ENGLAND—West Coast—Bardsey Island	New fog-signal.
48	IRELAND—South Coast—Cork—Spit Bank	Alteration of light.
49	NETHERLANDS—Schelde River—Zand Creek	New light.
50	" Texel—Kykduin	Alteration of light.
51	" Texel Island—Oude Schild	New harbour lights.
52	NORTH SEA—Jutland—Bovbjerg	New light.
53	BALTIC SEA—Gottland—Utholmen Island	Alteration of light.
54	FRANCE—West Coast—Penerf Roads	Tower on Borenis Bank.
55	" " Ile d'Yeu—Point Corbeau	Light improved.
56	SPAIN—North Coast—Cape Hignera	Temporary light established.
57	" " Tazones Point	Temporary light established.
58	MEDITERRANEAN—Algeria—Port Shershel	Light extinguished, and lighthouse building.
59	" Italy—Spezia	Light-vessel off Lagora Mole.
60	" Sicily—Catania	Alteration of light.
61	ADRIATIC—Calamota Channel—Olipa Island	Alteration of light.
62	" Fiume	Alteration of lights.
63	MEDITERRANEAN—Greece—Patras	Temporary alteration of light.
64	INDIA—Bay of Bengal—Chittagong—Norman Point	Alteration in position of light.
65	CHINA—Yangtse-kiang—Wusung River	Intended alteration of Lisimore Wreck & Wugung (W. side) lights.
66	JAPAN—Nipon—Toyama Bay—Fushiki	New light.
67	" " Siriya-saki	New fog-bell.
68	AUSTRALIA—South Australia—Eastern Shoal—Spencer Gulf	New light.
69	" " Milang—River Murray—Lake Alexandrina	New light.
70	" Victoria—Port Phillip—Arthur's Seat	Additional light.
71	" East Coast—Percy Isles	Discovery of sunken rock.
72	NEW ZEALAND—North Island—Portland Island	New light proposed.
73	" Foveaux Straits—Centre Island	New light proposed.
74	" Middle Island—Puysegur Point	New light proposed.
75	UNITED STATES—Delaware Bay—Five Fathom Bank	New shoal discovered; light-ship altered in position, and change in fog-signal.
76	NEWFOUNDLAND—Conception Bay—Carbonar Island	New light.
77	" Conception Bay—Cape St. Francis	Siren trumpet fog-signal.
78	CANADA—St. Lawrence River—Matane	Alteration of light.
79	" " Little Metis Point	Alteration of light.

NAUTICAL NOTICES.

47.—ENGLAND.—*West Coast.—Fog-Signal at Bardsey Island.*—

A siren trumpet fog-signal has been established at Bardsey Island, and will henceforth be sounded during foggy weather, giving *one blast every five minutes*.

48.—IRELAND.—*South Coast.—Cork Harbour.—Alteration in Spit Bank Light.*—On 1st March, 1878, the following alteration will be made in Spit Bank light, Cork harbour:—The light (fixed red) will show a sector of *white* light over the position of Bar rock. The sector of white light will embrace an arc of $22\frac{1}{2}^{\circ}$ between the bearings of S.W. by W. $\frac{1}{2}$ W. and S.W. $\frac{1}{2}$ S. *Variation*, $23\frac{1}{4}^{\circ}$ W.

49.—NETHERLANDS.—*Schelde River.—Fixed Light at Zand Creek Entrance.*—A light is now exhibited from a lighthouse on the mole, south side of entrance to Zand Creek, East Schelde. It is a *fixed white* light, elevated 32 feet above high water, and visible 10 miles. The lighthouse, 24 feet high, of iron framework, pentagonal, and painted black, is situated near the mole head. Position, lat. $51^{\circ} 32' 45''$ N., long. $3^{\circ} 55' 5''$ E. The temporary light formerly shown has been discontinued.

50.—NETHERLANDS.—*Texel.—Fixed Light at Kykduin.*—With reference to the intended alteration in position of Kykduin light, the light will be exhibited from the new lighthouse on April 1, 1878. The light will be *fixed white*, elevated 187 feet above high water, and visible 20 miles. The lighthouse, 182 feet high, constructed of iron and painted brown, is situated N. $47\frac{1}{2}^{\circ}$ E. about 650 yards from the old light tower, and in the same line of direction with regard to Dirkoomsduin leading light. Position as given, lat. $52^{\circ} 57' 20''$ N., long. $4^{\circ} 43' 40''$ E. *Variation*, $17\frac{1}{4}^{\circ}$ W. On the exhibition of this light, the light now shown from the old lighthouse will be discontinued, and the tower removed.

51.—NETHERLANDS.—*Texel Island.—South-East Coast.—Harbour Lights at Oude Schild.*—The following harbour lights are now exhibited at Oude Schild, viz.:—1. A *fixed red* light (recently established), shown from a standard on the west mole. 2. A *fixed white* light on the east mole. Position, lat. $53^{\circ} 2' 25''$ N.,

long. $4^{\circ} 51' 15''$ E. 3. A *fixed white* light at a dike on the north side of the harbour, situated N.W. $\frac{1}{4}$ W., 219 yards from the east mole light. This light serves as a guide entering the harbour. *Variation*, $16\frac{1}{4}^{\circ}$ W.

52.—NORTH SEA.—*Jutland*.—*West Coast*.—*Fixed Light at Bovbjerg*.—A light is now exhibited from a lighthouse recently erected at Bovbjerg, 12 miles southward of Thybo Rön channel. It is a *fixed white* light, elevated 202 feet above the sea, and visible 20 miles. The light tower, 67 feet high, is constructed of red brick. Position, lat. $56^{\circ} 31'$ N., long. $8^{\circ} 7'$ E.

53.—BALTIC SEA.—*Island of Gottland*.—*West Coast*.—*Alteration in Character of Utholmen Island Light*.—The following alteration has been made in the character of the light exhibited on Utholmen island, near Westergarn. It is now a *fixed* and *flashing* light (instead of fixed white, as formerly), showing a *fixed white* light seaward between the bearings of N. 42° W. and S. $5\frac{1}{4}^{\circ}$ E.; *fixed red* between the bearings of N. 42° W. and N. 85° W.; and *flashing white* light every two seconds (duration of flash one second) from the bearing of S. $5\frac{1}{4}^{\circ}$ E., over Skarlakansgrundet shoal, to the land. *Variation*, $8\frac{1}{2}^{\circ}$ W.

54.—FRANCE.—*West Coast*.—*Penerf Roads*.—The tower on Borenis bank is completed. It has the form of a truncated cone, with a diameter of 17 feet at the base, and 10 feet at the top; the total height is 29 feet, and it rises 10 feet above the level of the highest water. The tower is surmounted by an iron beacon and globe, and is painted red, with a white band.

55.—FRANCE.—*West Coast*.—*Ile d'Yeu*.—*Point Corbeau Light*.—The character of this light has been so far improved that it is now visible $8\frac{1}{4}$ miles.

56.—SPAIN.—*North Coast*.—*Temporary Light on Cape Higuera*.—A light is temporarily exhibited from the ruin of the old lighthouse on cape Higuera, west point of Fuenterrabia bay. It is a *fixed white* light, elevated 259 feet above the sea; visible seaward between the bearings of E. by S. $\frac{1}{2}$ S. and W. by N. $\frac{1}{2}$ N., from a distance of about 5 miles. *Variation*, $18\frac{1}{2}^{\circ}$ W.

57.—SPAIN.—*North Coast*.—*Temporary discontinuance of Taxona Point Light*.—There is a temporary discontinuance of the light

on Tazones point (Villaviciosa) pending the restoration of the illuminating apparatus, which was destroyed on 9th January, 1878.

58.—*MEDITERRANEAN.—Algeria.—Temporary Discontinuance of North Quay Light, Port Shershel.*—The *fixed red* light on the North quay, port Shershel, is temporarily discontinued; and the building from which it was shown removed. The works are being constructed and further notice will be given of the re-exhibition of this light.

59.—*MEDITERRANEAN.—Italy.—Light-vessel at Spezia.*—A light-vessel has been placed off the S.E. end of the Mole of Lagora, port Spezia. It shows two *fixed white* lights placed vertically, from 33 to 36 feet above the sea, visible three miles. The light on the Mole has been extinguished.

60.—*MEDITERRANEAN.—Sicily.—East Coast.—Port Catania.*—*Alterations in Old Mole Head Light.*—In order to lead vessels clear of the outer mole works, the following alteration has been made in the old mole head light, port Catania, viz.:—The light (*fixed red*) is now obscured over the whole length of the works in progress, or through the arc contained between Armisi point on the north, and the bell buoy off the south extreme of the works.

Note.—Vessels approaching port Catania from the northward or eastward at night, should not steer for the entrance until the red light on the old mole is visible; observing that Sciarra Biscari flashing light, bearing W.N.W. leads southward of the bell buoy. Entering from the southward, the red light should be kept in sight.

61.—*ADRIATIC.—Calamota Channel.—Alteration in position of Olipa Island Light.*—A light is now exhibited from a small tower near the south extreme of Olipa island, false entrance to Calamota channel. It is a *fixed red* light, elevated 103 feet above the sea, and visible through an arc of 210° , or between the bearings of E. by S. $\frac{1}{4}$ S., through north, and W. by S. $\frac{1}{2}$ S. The tower built of white stone, is situated 306 yards westward of the keeper's dwelling, from which the light was formerly exhibited. Variation, $9\frac{3}{4}^{\circ}$ W.

62.—*ADRIATIC.—Alterations in lights at Fiume.*—Consequent on the extension of the harbour works, the following alterations have been made in the lights at port Fiume, viz.:—(1.) A light on the shore, from a position about 180 yards southward of the Academy

in the western part of the town. It is a *fixed white* light intersected by *red* rays, elevated 39 feet above the sea, and visible between the bearings of E.S.E. and N. $\frac{1}{2}$ W., from a distance of 10 miles. During the day, a large globe, painted in *red* and *white* vertical bands, is shown from the lighthouse. (2.) A light-vessel, exhibiting two lights, and marking the extremity of the outer breakwater in course of construction, is now moored S. by W., $1\frac{3}{4}$ cables, from the shore light (1). The lights are placed vertically; the upper light is *fixed red*, elevated 23 feet above the sea; the lower light is *fixed white*, elevated 18 feet above the sea; both lights are visible 2 miles. The light-vessel is painted in *red* and *white* bands, and during the day carries a wicker globe at the masthead. (3.) A *fixed green* light is exhibited from Zichy pier head in course of construction southward of the barracks. On the exhibition of the above lights, the fixed red light on the breakwater, and the light on the small mole head, were discontinued.

Note.—Vessels entering port Fiume, should pass westward of the light-vessel, and between her and the shore light (1), the fixed green light on the pier head will then be visible, and a south-east course may be steered for the anchorage. *Variation*, $10\frac{1}{2}^{\circ}$ W. in 1878.

63.—MEDITERRANEAN.—*Greece.*—*Gulf of Patras.*—*Temporary alteration in Patras Light.*—Pending the completion of a new light-house, in course of construction, the fixed and flashing light has been discontinued; and in place thereof, a *fixed white* light has been exhibited from the mole head.

64.—INDIA.—*Bay of Bengal.*—*Chittagong River Entrance.*—*Alteration in position of Norman Point Lights.*—The two beacon lights on Norman point, south side of Chittagong (or Kornafuli) river entrance, have been moved 2,417 yards south of their former positions. The lights (fixed white), 40 yards apart, and bearing N.W. by W. $\frac{1}{2}$ W. and S.E. by E. $\frac{1}{4}$ E. from each other, should be visible from seaward through an arc of 160° ; or over the river entrance between the bearings of N. by W. and S.E. by S. The Western light is exhibited from a mast; the Eastern light, 5 feet higher than the Western, from a tripod; both beacons are painted white. Position as given, lat. $22^{\circ} 10' 50''$ N., long. $91^{\circ} 48' 30''$ E.

Note.—Sailing vessels approaching Chittagong river entrance from the southward and westward, with southerly winds, should avoid getting northward of the lights; at night, stand in with the lights bearing E. $\frac{1}{4}$ N., and anchor when distant from them about $2\frac{1}{2}$ miles, in five fathoms at low water spring tides, to await daylight. With the beacons in line and Hill flagstaff bearing N.E., a vessel will be about half a mile south-west of the bar buoys; here, the bar and river buoys will be distinctly seen, and pilots are always to be obtained. As the channel to Chittagong is long, narrow, and intricate, the services of a pilot are necessary. *Variation, 3° E.*

65.—CHINA.—*East Coast.*—*Yangtse-Kiang.*—*Wusung River Entrance.*—*Intended Alterations in Lights.*—The removal of the screw pile lighthouse being necessitated, through the water deepening around its foundation, the following alteration will be made in the Lismore wreck light:—The light (*fixed red*) will be shown from the lighthouse as long as possible; but on its discontinuance, two lights placed vertically will be exhibited from a small junk moored N.N.E., about 130 yards from the lighthouse. The upper light will be a *fixed red* light; the lower, a *fixed white* light. Also, on the removal of *Lismore* wreck lighthouse, the following alteration will be made in the light exhibited on the west side of Wusung river entrance:—The light (*fixed*) will then show *white* from the river bank north-west of the lighthouse, to the bearing of S. $3\frac{1}{4}^{\circ}$ E.; *green* between the bearings of S. $3\frac{1}{4}^{\circ}$ E. and S. $53\frac{3}{4}^{\circ}$ W.; *white* over the navigable channel of the entrance between S. $53\frac{3}{4}^{\circ}$ W. and S. $70\frac{1}{2}^{\circ}$ W.; and *red* from S. $70\frac{1}{2}^{\circ}$ W. to the left bank of the river. *Variation, 2 $\frac{1}{4}$ ° W.*

66.—JAPAN.—*Nippon.*—*West Coast.*—*Fixed Light at Fushiki, Toyama Bay.*—A light is exhibited from a lighthouse on the north-west side of the river entrance near Fushiki (Honotsu), Toyama Bay. It is a *fixed white* light, elevated 38 feet above the sea, and visible 10 miles. The lighthouse, 33 feet high, hexagonal and built of wood, is painted white. Position, lat. $36^{\circ} 47' N.$, long $137^{\circ} 5' E.$

Note.—Good anchorage will be found with the lighthouse bearing S.S.W. $\frac{1}{4}$ W., distant about three-quarters of a mile. *Variation, 5° W.*

67.—JAPAN.—*Nipon Island*.—*Tsugar Strait*.—*Fog-Signal at Siriya Saki*.—A fog-signal has been established at Siriya Saki, the north-east extremity of Nipon Island. During thick or foggy weather a bell attached to the lighthouse will be rung by machinery, continuously at the rate of *fifteen strokes in every minute*.

Note.—Rattler rock (awash at low water) has been ascertained to bear N. 70° E., distant about 1½ miles from Siriya Saki lighthouse.

68.—AUSTRALIA.—*South Australia*—*Eastern Shoal, Spencer Gulf*.—Early in 1878 a *fixed* light will be exhibited from a light-vessel moored off the northern end of the eastern shoal.

69.—AUSTRALIA.—*South Australia*—*Milang, River Murray, Lake Alexandrina*.—A *fixed white* light is now exhibited at the end of the Milang Jetty, visible about five miles.

70.—AUSTRALIA.—*Victoria*.—*Port Phillip, South Channel*.—*Additional Light under Arthur's Seat*.—An additional light is now exhibited from the lighthouse under Arthur's seat, South channel, port Phillip. It is a *fixed white* light, placed 40 feet below the red light, and only visible between the same bearings as the red light, viz., from S. by W. ½ W. to S.E. ½ E., and from a distance of from 8 to 10 miles.

Note.—Vessels outward bound by the south channel, will now make the light under Arthur's seat more readily. The Middle ground will be avoided by keeping this white light and the red light in sight. *Variation*, 8½° E.

71.—AUSTRALIA.—*East Coast*.—*Sunken Rock off No. 2 Percy Isle*.—A sunken rock has been discovered nearly 1½ mile south-westward of the south-west point of No 2 Percy Isle. This danger (*Normanby rock*), on which the steam vessel *Normanby* recently struck, is not more than 50 feet in extent, with 5 feet over it at low water spring tides, and 13 fathoms around; it bears south, distant 1¼ mile from the south extreme of Pine islets.

Note.—Pine peak (or No. 3 Percy isle) kept open either to the eastward or westward of the Pine islets leads clear of Normanby rock. The islet off the south end of North-east Percy isle open southward of the Spurs rocks leads south of Normanby rock. *Variation*, 8¼° E.

72.—NEW ZEALAND.—*North Island*.—*East Coast*.—*Intended*

Light on Portland Island.—It is intended, probably early in 1878, to exhibit a light from a lighthouse now in course of construction on the south point of Portland island, north point of entrance to Hawke bay. The light will be *revolving white*, attaining its greatest brilliancy every *thirty seconds*. From the lower part of the lighthouse, a *fixed red* light visible through an arc of about 6° , will be shown in the direction of Bull rock, which bears N.E., 4 miles distant. *Variation*, $14\frac{1}{4}^{\circ}$ E.

73.—NEW ZEALAND.—*Foveaux Strait.*—*Intended Light on Centre Island.*—It is intended, probably about the middle of 1878, to exhibit a light from a lighthouse now in course of construction on Centre island, north side of Foveaux strait. The light will be a *fixed white* light, visible between the bearings of about E. $\frac{1}{4}$ S., through north, to about W. by N. $\frac{2}{3}$ N. *Red* sectors will also be shown over the positions of certain inshore dangers, particulars of which will be given in a future notice. *Variation*, $16\frac{1}{2}^{\circ}$ E.

74.—NEW ZEALAND.—*Middle Island.*—*South-west Coast.*—*Intended Light on Puysegur Point.*—It is intended, probably about the middle of 1878, to exhibit a light from a lighthouse now in course of construction on Puysegur Point, N.W. point of entrance to Foveaux Strait. The light will be *flashing white*, showing a flash every *ten seconds*.

75.—UNITED STATES.—*Delaware Bay.*—*Change of Position of Five-Fathom-Bank Lightship.*—*Change in the Time of Blast of Fog-signal.*—A shoal of $3\frac{1}{2}$ fathoms water having been discovered about 3 miles south-west of the Five-Fathom-bank lightship, on the 28th of January, 1878, or as soon after as the weather permitted, the vessel would be moved to a new position, about 3 miles south of that it has hitherto occupied, and approximately as follows:—Lat. $38^{\circ} 48' 20''$ N.; long. $74^{\circ} 36' 10''$ W.; with Cape Henlopen light bearing west, 23 miles distant. Vessels entering Delaware bay should pass southward and eastward of the lightship. Also on and after February 9th, 1878, the characteristic of the fog-signal on this vessel would be changed to *one blast of four seconds' duration, each minute*.

76.—NEWFOUNDLAND.—*East Coast.*—*Conception Bay.*—*Fixed Light on Carbonear Island.*—On February 1, 1878, a light would

be exhibited from a lighthouse recently erected on Carbonear Island, Conception Bay. It is a *fixed white* light, elevated 195 feet above the sea, and visible sixteen miles. The lighthouse and dwelling attached, are built of wood. The upright parts of the buildings are painted white, and the roofs red. Position, lat. $47^{\circ} 44' 20''$ N., long. $53^{\circ} 9' 25''$ W.

77.—NEWFOUNDLAND.—*East Coast.—Conception Bay.—Fog-signal at Cape St. Francis.*—A powerful siren trumpet has been established at Cape St. Francis, south point of entrance to Conception Bay. It is placed in an engine-house attached to the lighthouse, and will be sounded *every minute*, during thick weather, fogs, and snow storms, as follows :—Duration of sound, *five seconds*; of silence, seven seconds; of sound, *five seconds*; of silence, forty-three seconds. Position approximate, lat. $47^{\circ} 48' 30''$ N., long. $52^{\circ} 47' 10''$ W. The mouth of the trumpet is towards Brandies rocks; the sound therefore should be loudest in an easterly direction.

Note.—Mariners are cautioned as to the uncertainty in the range of sound of fog-signals: even of powerful instruments as above. The same instrument may be heard twenty or more miles at one time, and at another time not more than at a distance of two or three miles.

78.—CANADA.—*St. Lawrence River.—Intended Alteration in Matane Light.*—On the opening of navigation in 1878, the character of Matane light, south shore of St. Lawrence river, will be changed from a fixed red light to a *fixed white* light.

79.—CANADA.—*St. Lawrence River.—Intended Alteration in Little Metis Point Light.*—On the opening of navigation in 1878, the character of Little Metis point light, south shore of St. Lawrence river, will be changed from a revolving white light to an *alternating red and white* light, attaining its greatest brilliancy *every minute*.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, 1878.

No. 1.—GULF OF ADEN PILOT, Notice 2, Sokotra, Aden, &c.

No. 2.—RED SEA PILOT, Notice 8, Central Channel, Nebayir Islands, Jebel Zugur, and the Hanish Islands.

No. 3.—MEDITERRANEAN PILOT, Vol. I., Notice 1, Cagliari Bay, &c.

OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1878.

(This list is completed to the 18th of each month.)

Hugh Streatfield, iron ; built at Sunderland in 1871 ; owned by Mr. J. S. Barwick and others of that place ; tonnage, 522 ; Sunderland to Ostend ; coals ; stranded on the Hasborough Sand, December 13, 1877. Inquiry held at South Shields, January 10, 1878, before Yorke, Stip. Mag. Holt and Beasley, N.A. Master's certificate returned. Chief mate held in default and reprimanded.

162. *Meerschau*m, s.s., iron ; built at Newcastle in 1873 ; owned by Mr. H. F. Wilcox and others, of Sunderland ; tonnage, 255 ; Leer to Riga ; iron wire ; stranded on the Island of Oland, November 9, 1877. Inquiry held at South Shields, January 12, 1878, before Yorke, Stip. Mag. Holt and Beasley, N.A. Casualty due to a strong current which set the vessel out of her course. Master free from blame and recommended for a fresh certificate, his own having been lost.

174. *Galeed*, s.s., iron ; built at Sunderland in 1870 ; owned by Mr. J. F. Middleton and others, of North Shields ; tonnage, 604 ; Riga to London ; grain ; stranded five miles north of Oland Light. Inquiry held in South Shields, January 23, 1878, before Yorke, Stip. Mag. Holt and Beasley, N.A. Master guilty of negligent navigation in not using the lead ; also considered to have deceived the Court by asserting that he had steered a course, which he, in fact, had not. Certificate suspended for six months, but recommended for one as chief mate during that period.

175. *Nellie*, s.s., iron ; built at West Hartlepool in 1871 ; owned by Mr. G. Moon and others ; tonnage, 435 and 89 ; flour ; stranded in the Samso Channel, Little Belt, October 29, 1877. Inquiry held at Middlesbro', December 31, 1877, before Coleman, Stip. Mag. Grant and Jones, N.A. Master guilty of negligence. Certificate suspended for three months. Court recommended that a mate's certificate be granted to him during that period.

180. *Satellite*, schooner, wood ; built at Kingston, Elgin, in 1869 ; owned by Mr. C. W. Gray, of London ; tonnage, 275 ;

London to Bermuda ; Government stores and general cargo ; stranded on the Kentish Knock, November 28, 1877. Inquiry held at Greenwich, January 17, 1878, before Slade, Stip. Mag. Foster and Parfitt, N.A. Casualty due to drunkenness of master and chief mate. Master's certificate cancelled ; mate's suspended for twelve months.

184. *Julia*, brig, wood ; built at Rochester in 1856 ; owned by Mr. J. Rains and others ; tonnage, 237 ; Viborg to Shoreham ; deals, &c. ; lost on a reef near Ungskär, in the Baltic, November 11, 1877. Inquiry held at Westminster, January 31, 1878, before Rothery, Wreck Commissioner. Holt and Castle, N.A. Casualty due to master having been the worse for liquor before and at the time of the stranding of the vessel. Certificate cancelled.

189. *Calenick*, wood ; built at Llanelly, in 1826 ; owned by Mr. G. H. Bate and others, of Fowey ; tonnage, 126 ; Fowey to Bremerhaven ; clay and stone ; and afterwards Bremerhaven to Frederickstadt, in ballast ; abandoned fifty miles north of Heligoland, November 24, 1877. Inquiry held at Westminster, January 22, 1878, before Rothery, Wreck Commissioner. Pickard and Curling, N.A. Master and crew exonerated from blame. Ship unseaworthy and unfit to go to sea.

193. *Temon*, s.s., iron ; built at North Shields in the year 1873 ; owned by Mr. W. Mason, of Newcastle ; tonnage, 495 ; Hamburg to London ; general cargo ; stranded on the Cross Sand, December 11, 1877. Inquiry held at South Shields, January 5, 1878, before Yorke, Stip. Mag. Holt and Beasley, N.A. Casualty due to an error of judgment caused by the master's anxiety to clear a fleet of fishing boats. Certificate returned.

198. *Albert and Edward*, s.s., iron ; built at Sunderland, in 1877 ; owned by Mr. F. Gordon, and another, of Sunderland ; tonnage, 790 ; South Shields to London ; coals ; stranded on the Ovens Flat, in the River Thames, December 14, 1877. Inquiry held at South Shields, January 16, 1878, before Yorke, Stip. Mag. Holt and Beasley, N.A. Casualty due to an error of judgment on the part of the master in mistaking the lights on Coalhouse Point for the lights of the shipping in Gravesend Reach. Certificate returned.

199. *Brothers* and *Vindolana*, s.s.; *Brothers*, barque, wood; built at Yarmouth, N.S., in 1871; owned by Mr. L. Cann and others; tonnage, 537; Bristol to United States; coals; *Vindolana*, s.s., iron; built at Middlesbro' in 1877; owned by Mr. J. Hall and others, of Newcastle-on-Tyne; tonnage, 1268; Bristol to New York; coals; collided thirty-five miles S.W. of Tuscar Rock, November 10, 1877. Inquiry held at Westminster, January 15, 1878, before Rothery, Wreck Commissioner. Aplin and Castle, N.A. Master of the *Vindolana* to blame for not porting his helm when first he made out the barque's course, and thereby passing under her stern: also much to blame for leaving the *Brothers* after getting clear. Certificate suspended for six months. Second mate of the *Vindolana* reprimanded for keeping a bad look-out, and master of the *Brothers* censured for having his lights in the mizen rigging, instead of in their proper places on either bow.

200. *Charles Batters*, s.s., iron; built at Liverpool, in 1873; owned by Mr. R. Curwen; tonnage, 642 and 58; Polomares to Middlesbro'; iron ore; lost on the Saltscar Rocks, December 19, 1877. Inquiry held at Liverpool, January 11, 1878, before Raffles, Stip. Mag. Knox and Nicolas, N.A. Casualty due to master's neglect of the lead, and to trusting to what was said by a fisherman, whom he picked up. Certificate suspended for three months.

202. *Gloamin*, s.s., iron; built at Aberdeen in 1873; owned by Messrs. Mudie, of Dundee; tonnage, 392; Burnt Island to Calais; coals; lost on Thornwick Nab, near Flamborough Head, December 20, 1877. Inquiry held at Dundee, January 11, 1878, before Edward and Simpson, J.P. Ward and Grant, N.A. Casualty caused by the unskilful and negligent navigation of the master. Certificate suspended for three months.

204. *Danae*, s.s., iron; built at Sunderland, in 1873; owned by Mr. J. Robinson and others, of South Shields; tonnage, 1156; Copenhagen to London; wheat in bulk; foundered off the Danish Coast, December 25, 1877. Inquiry held at Westminster, January 29, 1878, before Rothery, Wreck Commissioner. Forster and Jones, N.A. Casualty due (1) to her defective construction; (2) to her being

overladen ; (3) to the insufficient depth of her shifting-boards ; and (4) to the sluices between the engine-room and main-hold having been left open. Master to blame for the overloading, insufficiency of shifting-boards, and for the sluices being open. Certificate suspended for six months ; but recommended for a chief mate's certificate during suspension.

206. *Maiden Bower*, wood ; built at Scilly, in 1863 ; owned by Mr. S. T. Wallis, of Penzance ; tonnage, 140 ; Palermo to Cardiff ; sulphur and oranges ; lost on Breaksea Point, December 30, 1877. Inquiry held at Cardiff, January 16, 1878, before Alexander and Phillips, J.P. Hight and Powell, N.A. Master in default for not remaining on deck and seeing that the vessel was properly steered, and in not ascertaining the true position of his vessel. Certificate suspended for six months. Mate also in default for not coming on deck to keep his watch, and for not keeping a proper look-out when in charge of the deck. Certificate suspended for nine months.

207. *Soukar*, iron ; built at Port Glasgow, in 1864 ; owned by Messrs. Saville, Temple, and Scott, of London ; tonnage, 1304 ; Hamburg to London ; ballast ; stranded on the Holm Sand, off Lowestoft, January 3, 1878. Inquiry held at Westminster, January 24, 1878, before Rothery, Wreck Commissioner. Harris and Visconti, N.A. Master severely reprimanded for negligent navigation in not using the lead, and in trusting too much to the pilot taken on board at Hamburg.

208. *Sandsend*, s.s., iron ; built at Hartlepool in 1869 ; owned by Mr. J. Pyman and others, of Hartlepool ; tonnage, 454 ; Pillau to Stockton ; grain ; stranded off Hartlepool, January 2, 1878. Inquiry held at Middlesbro', January 17, 1878, before Coleman, Stip. Mag. Grant and Wilson, N.A. Casualty due to careless navigation on the part of the pilot in charge. Master blameless. Certificate returned.

209. *Oscar*, s.s., iron ; built at West Hartlepool in 1861 ; owned by the London and Edinburgh Shipping Company, Leith ; tonnage, 824 ; Tyne to Cadiz ; coals ; lost on the Whitby Rock, January 12, 1878. Inquiry held at Whitby, January 19, 1878, before English and Richardson, J.P. Knox and Castle, N.A. Casualty

due to neglect of the use of the lead. Master's certificate suspended for three months.

210. *Tocapilla*, iron; built in 1875; owned by Mr. J. Jose; tonnage, 495; *Tocapilla* to Swansea; copper ore; stranded in Rhosilly Bay, December 31, 1877. Inquiry held at Swansea, January 24, 1878, before Fowler, Stip. Mag. Hight and Powell, N.A. Master guilty of culpable carelessness in not using the lead more frequently. Certificate suspended for three months.

211. *Balmoral*, iron; built at Dumbarton in 1850; owned by Mr. J. McMorland, of Glasgow; tonnage, 166; Grangemouth to Middlesbro'; ballast; stranded three-quarters of a mile to the north of Hartlepool Hough, January 4, 1878. Inquiry held at Middlesbro', January 21, 1878, before Coleman, Stip. Mag. Grant and Wilson, N.A. Master guilty of gross negligence both in the navigation of the ship and the look-out. Certificate suspended for six months.

213. *William Symington*, s.s., iron; built at Sunderland in 1877; owned by Mr. J. G. Marychurch of Cardiff; tonnage, 1322; Sunderland to Bombay; railway materials; stranded at the mouth of the Tyne, January 3, 1878, whilst in charge of a pilot. Inquiry held at South Shields, January 19, 1878, before Yorke, Stip. Mag. Holt and Beasley, N.A. Casualty entirely due to great negligence of the pilot, but as his license had been suspended, the Court only reprimanded him severely.

217. *Intrepid* and *Forest Fairy*, both wood; *Intrepid* built at St. Malo in 1874; owned by Mr. R. Robinson of Boston, Lincolnshire; tonnage, 53; Liverpool to Wadebridge; wheat, &c.; *Forest Fairy*, built at Ipswich in 1859; owned by Mr. E. Pope and others of that place; tonnage, 122; Liverpool to Cardiff; ballast; collided South West of Holyhead, January 13, 1878; the *Intrepid* foundering. Inquiry held at Liverpool, January 29, 1878, before Raffles, Stip. Mag. Grant and Wilson, N.A. Master of *Forest Fairy* in default for not keeping a good look-out, and also for not keeping out of the way of the *Intrepid*, pursuant to Article 12 of the Regulations for Preventing Collisions at Sea. Certificate suspended for six months.

Fairy Queen, s.s.; iron; built at Dundee in 1860; owned by

Mr. J. Langlands and others, of Glasgow ; tonnage, 229 ; Stromness to Leith ; general cargo and coal ; lost on the North Carr Rocks, December 28, 1877. Inquiry held at Glasgow, January 23, 1878, before Gilkison and Matheson, J.P. Forster and Yard, N.A. No fault attributable to master. Chief mate in default for not taking proper precautions when the weather became thick. His certificate, as master in the Home Trade, suspended for three months.

OFFICIAL INQUIRIES ABROAD.

Star of India ; ship ; put into Stanley, Falkland Islands ; leaky, and ballast shifted ; September, 11 1877. Inquiry held at Stanley, October 26, 1877. Master not to blame ; the Court considering that the vessel was unseaworthy until certain repairs recommended by Lloyd's agent should have been carried out.

St. George ; barque ; lost on Sangor Island, mouth of the Hooghly ; September 10, 1877. Inquiry held at Calcutta, November 3, 1877. Master in default for running his ship into the river without a pilot, and without a chart. Certificate suspended for six months, but recommended for a chief mate's certificate during that period.

Witch of the Wave ; barque ; lost on a reef near Island of Choiseil. Inquiry held at Sydney, November 19, 1877. Master free from blame, the vessel having drifted on the rocks in consequence of the wind failing.

Miami ; barque ; lost in the Bay of Molle on a rock not marked in any chart ; November 29, 1877. Naval Court held at Iquique December 6, 1877. No blame attached to captain or officers.

Eliza, brig ; stranded on the South Quarken, Gulf of Bothnia, November 21, 1877. Naval Court held at Stockholm, December 6, 1877. Master guilty of gross ignorance and negligence in navigation. Certificate suspended for six months ; mate severely reprimanded.

Viola, brig ; West Hartlepool ; stranded off Rohne, in Gotland, November 5, 1877. Naval Court held at Stockholm, December 11, 1877. Master guilty of great negligence in navigating his vessel, and also of intoxication on the night of the disaster. Cer-

tificate suspended for 12 months, and master fined £50 for obstructing the proceedings of the Court by his refusal to appear before it, and to produce the documents required.

Piccadilly, brig; lost near Ratel River, November 26, 1877. Inquiry held at Cape Town, December 13, 1877. Master exonerated from blame.

GENERAL.

OUR WHITE SLAVES.—There is a very great deal of excitement just now on the subject of apprentices to the sea service at Great Grimsby. There fisher lads desert in such numbers, that they may be said to be in permanent occupation of quarters in gaol. Persons interested in fishing smacks are much scandalised at the lads for this exceeding aptitude for desertion. The blame is, of course, put on the lads. What are we coming to? is asked "in holy horror and pious grief" by virtuous men of true orthodox creeds, who have made, or are making their little "pile" by the assistance of apprentice lads. Our answer is one that is more indignant than polite; and it is, we are coming, indeed we have come, to a system of white slavery, that will need the strong arm of Parliament to destroy by exceptional legislation. It is the greed of some of those persons, who have to do with the securing, or procuring and working of these "apprentices," that is the root of the evil, and not the evil nature of the lads themselves. Boys will be boys; but will not be slaves. Those who forget this, although it may suit their pockets for a time, will suffer for it in the end; and as slavery is an "exceptional institution," it must, where it exists, be met by exceptional législation. It came to our knowledge a little while ago, and we can speak with certainty, because we know some of the parties, that two boys, the sons of a London professional gentleman, ran away from school in a desire to go to sea. They got into a workhouse on their way to Grimsby. They were there picked up by a Jew tramp, who dealt in them and apprenticed them before the Board of Trade official, and, therefore, with official form and official registry, for a period of five

years ; for what wages does the reader think ? For nothing ! The crimp was of course paid. But this case is not so bad as others. We know of cases where boys are apprenticed, and respectable boys too, for ten years for nothing. There is a regular, or rather an irregular trade, in procuring apprentices this way. Now our advice is, that owners and master should, if they expect lads to remain at sea, treat them as reasonable beings, and pay and feed and clothe them properly. We are not sorry, however, that one side complains, since it is to be hoped that the complaint may lead to a proper and formal inquiry and investigation into the conditions of service in Grimsby smacks. Freedom of contract is a grand thing ; but can this be called freedom of contract, or freedom of anything else ? Where boys are picked up by crimps, and apprenticed for the best part of their life for nothing, are not the terms " kidnapping " and " slavery " more appropriate ?

LOSS OF LIFE AT SEA.


It must be disheartening to those shipowners who are careful to provide their ships with life-buoys, belts, and other appliances for saving the lives of their seamen in case of wreck or other accident, to find that their solicitude is, in a great measure, rendered nugatory by the recklessness or helplessness of the seamen themselves. Life-buoys and belts are the most convenient, as well as the most efficient, life-saving gear in case of emergency, but it would be interesting to know how many lives they are instrumental in saving from shipwreck in the course of a year. We fear the lives thus saved are lamentably few.

The following disaster at sea appears from the information at present before us to afford a remarkable instance of the lack of the instinct of self-preservation that characterises the British seaman. The carpenter of the ship *Rokeby Hall*, bound from Iquique to Falmouth for orders, fell overboard on the 11th November last, in lat. 47° S., long. 84° W. A life-buoy was immediately thrown to him, and a boat manned by the second mate, three seamen, and an apprentice, all provided with life-belts, sent to his assistance. After an absence of about an hour and a-half the boat was observed returning, but, when near the ship, she was swamped by the crest of a wave. Another boat was immediately sent to the

rescue, but returned after a long search having found—what?—the life-buoy thrown to the carpenter, and the life-belts provided to the boat's crew! The six men had disappeared. We are told that the weather was fine, and the wind moderate, although the sea was rather high. Now what could be more distressing than the fate of these six men, who, being provided with life-belts, had not the forethought to put them on before the boat capsized, nor the presence of mind to cling to them afterwards. We confess that we can hardly realize such utter helplessness, and should be glad to hear of further inquiry being made into the matter.

SHIPMASTERS' SOCIETY.

To the Editor of the "Nautical Magazine."

IR,—It may interest your readers to know that the Committee of this Society considered it necessary, in the interest of the Mercantile Marine, to draw Sir Charles Adderley's attention to certain clauses in his proposed Shipping Act, and accordingly a deputation waited upon him on the 1st instant.

In anticipation of the Employers and Workmen Act being extended to seamen, the necessity was felt for having the term "has joined his ship" defined, and a recommendation was therefore made that it should be clearly stated that the time when a seaman is considered to have joined his ship is the date and hour appearing in the Articles ordering him to be on board.

Again, in Section 7 (providing for the arrest of a deserter), it was deemed advisable, that in the second paragraph, the term "the ship has finally cleared outwards for the voyage," should signify, as above, the date and hour entered in the Articles.

Section 15, paragraphs 1 and 2, being of such a nature as to place a captain in the hands of a dissatisfied crew, recommendation was made that it should be expunged, and that the imprisonment for assaulting an officer might be increased to six months.

In referring to Courts of Summary Jurisdiction, where cases of mutiny, theft, and cargo broaching, have to be dealt with, it was

shown that the extreme penalty which magistrates can pass, is inadequate, and that the substitution of payment in lieu of imprisonment, is most undesirable. It was, therefore, respectfully submitted for the consideration of Sir Charles Adderley, that the Bill should be so modified as to empower a magistrate to pass a longer term of imprisonment, say two years, and that it should contain a clause providing that a master, officers, and crew of a ship unable to stay to prosecute in the Superior Court, might give evidence on oath before a magistrate, which could be used at the trial of the prisoner, and the ship be allowed to proceed.

The subject of summary punishment for cargo broaching has for some time past occupied the attention of my Committee, bearing in mind the case of the *Crownthorpe*, where the crew mutinied, broached cargo, and upon arrival at Auckland (the case being dealt with summarily, as the vessel was bound by charter, and unable to wait two months for the sessions) the prisoners were sentenced to a few months' imprisonment.

It is with a view to protect a captain, and to deter seamen from the unfortunately too frequent recurrence of such cases as the above, that the Committee of this Society have pointed out the necessity for punishment being increased, so that a master of a ship in foreign ports will know that guilty seamen will be punished without his being compelled to prosecute in the Superior Court, at a great loss to himself and his owners.

I am, Sir, your obedient servant,

B. F. CRAMER,

Secretary, Shipmasters' Society.

Jeffrey's Square, February 19, 1878.

[We understand that during the past two months, there has been a marked increase in the applications for membership of this Society, and there is every reason to believe, that if members will only bring it before the notice of their brother shipmasters, the Society will be a complete success.

A scheme for mutual insurance of members' effects, is, we hear, almost ready, but it is necessary that the Committee should receive a sufficient number of names of insurers, to enable the scheme to be floated.—ED.]


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TERRITORIAL WATERS.
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HE degree of jurisdiction which may be rightfully exercised by a nation over the open sea which adjoins its coasts, has become a problem of considerable intricacy ever since the doctrine of the "Mare Liberum" has obtained general acceptance, and the high seas have come to be regarded as the common highway of nations. It is, however, generally admitted that all vessels which navigate the high seas are, in certain matters, subject to a common law of nations, whilst in other matters they are subject to the law of the State under whose flag they are navigated. It follows, therefore, that whilst all persons on board of them in matters which are within the scope of the common law of the sea, are justiciable by the Admiralty tribunals of all nations, in other matters they are only amenable to the law of their flag. The maintenance of the peace of the seas is one of the main objects of the common law, and accordingly all violations of the peace of the seas are offences or torts, as the case may be, of which the Admiralty tribunals in every country are entitled to take cognisance.

Meanwhile, in accepting the doctrine of "the Liberty of the

Sea," as propounded and made popular by the writings of Grotius, States have found it expedient to engraft upon it certain exceptions, as indispensable for the defence and security of their respective possessions. For instance, it is held by common consent to be of paramount importance to the safety and welfare of every maritime State, that a general liberty should not be allowed to vessels of war to approach so near to its coasts, as to hinder access to them, and to impede the intercourse of peaceful vessels of commerce with its ports. Upon this principle neutral nations are held to be entitled to prohibit belligerent war vessels from carrying on hostilities on the high seas within such a distance from their coasts, as would imperil the lives of the people on their shores or the security of vessels at anchor off their ports, and the limit of that distance is now by common consent taken to be a marine league of open sea measured seawards from low water mark, the distance of a marine league having been until recent times considered to be the utmost range of a cannon shot. In addition to this maritime zone of open sea, bays and sea-chambers (that is, portions of the open sea cut off by lines drawn from one headland to another) are held to be under the jurisdiction of the State whose territory borders on them, and so, in fact, the three-mile zone and the bays and sea-chambers of a maritime State have come to be termed its territorial waters, as being tracts of sea over which it exercises, for purposes of the defence and security of its territory, rights of sovereignty. These rights of sovereignty, however, are not unlimited. For instance, the claim of sovereignty in respect of the above-mentioned portions of the open sea cannot be maintained by the adjacent State to the extent of prohibiting belligerent vessels from passing along them without committing any violence therein. Such waters are considered in time of war, equally as of peace, to be the common thoroughfare of nations, and no permission is required from the adjacent State to authorise a belligerent vessel to sail along them. It is otherwise, however, with waters which are strictly parts of the territory of a State, as being *intra fauces terræ*. Over such waters the adjacent State has absolute jurisdiction, and may exclude the war vessels of belligerent nations

altogether from the use of them, if it wishes to maintain an attitude of rigid neutrality.

It is a moot question whether a nation is of natural right entitled to exclude altogether foreign vessels of commerce from its ports. The practice of European nations has decided this question in the negative, but, under the European Law of Nations, States are entitled to regulate the trade of foreign vessels with their ports, so far as to forbid them access to certain ports, whilst they allow them liberty of access to others. In addition, upon the analogy of their admitted right to interfere with the navigation of foreign vessels of war within the three-mile zone, because the safety of their people and the security of their trade require it, States are entitled to exercise rights of sovereignty over foreign vessels of commerce within the same limits, where the protection of their maritime revenue or the preservation of the health of their people render such interference necessary. Still further, under the Comity of Nations, States exercise in matters of trade for the security of their maritime revenue and in matters of health for the protection of the lives of their subjects, a permissive jurisdiction over foreign vessels of commerce approaching their ports at a distance from their coasts of more than a marine league seawards. England, for instance, asserts a right to a customs zone and to a quarantine zone of two marine leagues or more seawards, and has recorded its assertion of that right in more than one Act of Parliament, whilst her Government is continually involved in disputes with the Government of Spain, by reason of the Spanish revenue-cruisers overhauling British trading vessels, whilst they are at a distance of more than a marine league from the Spanish coast. There would thus seem to be, at first sight, an inconsistency in the conduct of England in such matters, but England, in fact, only exercises this qualified jurisdiction beyond the three-mile zone over her own vessels, and over such foreign vessels as are bound to her ports, whilst Spain visits English vessels and sometimes seizes them whilst passing along the adjoining waters of the Mediterranean, if they come within six miles of her coast, although the papers, which they have on board, indicate their destination to be a Portuguese or an African port. Spain, on the other hand, justifies

her right to overhaul such vessels, on the ground that it is necessary for her to protect her maritime revenue against an illicit trade, which is systematically carried on by vessels hailing from Gibraltar and navigated under the British flag with colourable clearance-papers on board. In all such cases, when a merchant vessel has been seized upon the open seas beyond the three-mile zone by a revenue cruiser of the adjoining State, and where such vessel has been approaching the coasts of that State with an intention to violate its revenue laws or its quarantine regulations, the Nation whose mercantile flag has been abused for purposes of such illicit commerce, waives in practice its right to redress, holding those in charge of the offending vessel to have forfeited, through their bad faith, all just claims to the protection of their flag.

The right of fishery comes under different considerations of law from the right of navigation, for the right of fishery in certain portions of the open sea may be the exclusive right of a single nation. The use of all parts of the open sea in respect of navigation is common to all nations, but the produce of the sea is distinguishable from the use of the sea; precisely as there may exist upon land a public right of way across a field, of which the crops are private property. The right of fishery is, in fact, a possessory right, which a nation may exercise jointly with other nations, or may prescribe to exercise solely and to the exclusion of other nations, where the acquiescence of other nations in such exclusive enjoyment may be presumed from long and undisturbed usage. The established practice of European nations may now be considered to have sanctioned the exclusive right of every nation to the fisheries in the waters adjacent to its coasts, within a marine league from low-water mark. There were early treaties between France and England, under which it was agreed that the subjects of either States might fish anywhere in the seas which separate their respective dominions, during certain times of the year. The existing treaty engagements between the two powers proceed upon another view of mutual convenience, and the Convention of Paris (3rd August, 1839) has accordingly provided, that the subjects of either State shall enjoy an exclusive right of fishery, within a distance of three miles from low-water mark

along the whole extent of their respective coasts, and in the case of bays, of which the openings do not exceed ten miles, at a distance of three miles from a line drawn from one cape to another. A similar treaty between the United States of America and Great Britain (2nd August, 1839) on the subject of the right of fishery in the waters adjacent to Newfoundland, has recognised the exclusive right of British subjects to the fisheries within a zone extending a marine league from the coast. It appears also from the instructions issued by the Government of the North German Confederation on the subject of its fisheries, and which were cited in a recent debate in the House of Lords, a report of which is published in the *Times* journal of March 9th, that the North German Government asserts a right of territorial sovereignty over a maritime zone extending three marine miles from its coasts, and, in virtue of that sovereignty, prohibits all foreign vessels from fishing within that zone. The language of the instructions is very absolute, and goes further than we should have thought the occasion to require. We quote from the report in the *Times* journal: "That tract of sea which extends to a distance of three sea miles from the extremest limits, which the ebb tide leaves dry, of the German North Sea coast, of the German islands or flats lying before it, as well as those bays and incurvations of the coast which are ten sea miles or less in breadth, reckoned from the extremest points of the land and the flats, must be considered as under the territorial sovereignty of the North German Confederation. So far as their territorial sovereignty extends, in accordance herewith fishing is allowed exclusively to fishermen of German nationality and to fishing boats belonging to North German subjects. Fishing within the aforesaid range is therefore forbidden to foreign fishing boats under any circumstances, neither must they resort there at all, unless it be that the wind, the current, seafaring wants, or some other cause, entirely independent of the commander's will, should lead to the transgression of the limits, or that the boat is on its direct way to a port where its cargo is to be sold."

Further, the instructions go on to say: "Foreign fishing boats, which pass within the limits of territorial sovereignty described in

No. 1, of their own free will, and not being on their direct way to a port for the sale of fish, are to be turned back. If the fishermen therein resist, or if they fish within the aforesaid territorial limits, they may be arrested and delivered over for judgment to the nearest local authority, which is competent." It would thus appear, that the North German Confederation asserts over its maritime zone not merely a right of excluding foreign vessels from fishing within it, but a right of coercive jurisdiction over their crews if they trespass upon it, and this not in pursuance of any treaty arrangements with neighbouring nations, but in virtue of territorial sovereignty over the waters. The jurists of the last century did not take such high ground, and they were content to rest the exclusive right of a nation to a fishery in the open sea upon the principle that the *produce* of the sea, unlike the *use* of the sea for purposes of navigation, was not inexhaustible. "It furnishes," writes Vattel, "fish, shells, pearls, amber, &c. Now in all these respects its use is not inexhaustible, wherefore the nations to whom the coasts belong, may appropriate to themselves and convert to their own profit, an advantage which Nature has so placed within their reach as to enable them conveniently to take possession of it, in the same manner as they possessed themselves of the dominion of the land which they inhabit. Who can doubt that the pearl fisheries of Bahrem and Ceylon may lawfully become property? And though, where the catching of fish is the only object, the fishery appears less liable to be exhausted, yet if a nation have on their coasts a particular fishery of a profitable nature, and of which they may become masters, shall they not be permitted to appropriate to themselves that bounteous gift of Nature, as an appendage to the country which they possess, and to reserve to themselves the great advantage which their commerce may thence derive, in case there should be a sufficient abundance of fish to supply the neighbouring nations? But if so far from taking possession of it, the nation has acknowledged the common right of other nations to come and fish there, it can no longer exclude them from it; it has left that fishery in its primitive freedom, at least with respect to those who have been accustomed to take advantage of it. The English not having originally taken possession of the

herring fishery on their coasts, it has become common to them with other nations." Book 1, c. xxiii, s. 267.

Such a view of the exclusive right of a nation to a fishery in the open sea, viz., that it is founded on possession and long usage, is less open to objection in regard to the principle involved in it, than the theory which bases it upon a territorial right of empire over the sea, consequent upon the possession by a nation of the adjacent coast. Modern international law, however, has applied the theory of territorial sovereignty to a ship on the high seas, as the warrant of the State, under whose flag it sails, to exercise jurisdiction over the persons on board of it; and, as that theory has been pressed to its extreme logical consequences in the service of the ship, it is not unreasonable that it should be met by the counter-theory of territorial sovereignty over a three-mile zone of open sea in favour of the adjacent State, as its warrant to exercise a police over all vessels passing along the zone, in the interest of its own defence and security.

The right of levying sea-tolls has been classed by writers on international law, as amongst the *jura littoris*; and where those tolls are levied for the purposes of defraying the expenses, which are necessary to secure the safety and convenience of navigation, as, for instance, the expenses incurred in the erection of lighthouses, or the affixing and maintenance of sea marks to give notice of hidden rocks and shoals, they are equitable in their nature, and it is reasonable that those, who take upon themselves the burden and charge of such aids to navigation, should require all vessels benefited by them to contribute to their support. In practice, however, if a foreign vessel merely passes along the coasts of a nation without casting anchor within a marine league of them, or without entering into any of its harbours, it is not subject to the payment of any dues for passing lights. This practice may be regarded as grounded upon two principles: first, that the right of passing peaceably along all portions of the open sea is one of the natural rights of nations, and, secondly, that the primary object of lighthouses and sea marks is to guide vessels into the harbours of the adjacent State, although the accidental result may be to light the sea way for all vessels sailing along its

coasts. But floating light-ships are of comparatively novel institution, and seem to come under different considerations of public law, as they are moored and maintained in parts of the open sea, which are far beyond a marine league from the coasts of any nation. For instance, England maintains a light-vessel on the Galloper Sand, which is twenty-four miles distant from the nearest coastguard station on the English shore; a light-vessel on the Kentish Knock Sand, which is twenty miles distant from the Essex coast; a light-vessel on the Varne Sand, which is nearly in mid-channel between the English and French coasts, and is ten miles distant from the English shore; and a light-vessel on the Seven Stones, which is fifteen miles distant from the Land's End. It would be easy to enumerate more than a dozen light-vessels, which England keeps moored near dangerous rocks and shoals in the open sea, at a distance of more than a marine league from her coasts. On the other hand, the Eddystone Lighthouse is built upon a rock distant ten miles from the mainland; and England has erected other fixed lighthouses on rocks in the neighbouring seas, distant more than a marine league from her coasts. In the case of such lighthouses erected on isolated rocks there can be no doubt, that a nation is at liberty to take possession of such rocks, and to exercise rights of sovereignty over them. But what are we to say of the neighbouring sea within a marine league of such lighthouses? Is it to be deemed by international law to be within the territorial sovereignty of the State which has taken possession of the rocks? and may that State claim for its subjects an exclusive right of fishery over the tract of sea within a marine league of the rocks? Further, let us suppose a case where a ridge of rocks runs out from the mainland of a State beneath the surface of the sea, to the distance of seven or ten miles—Has the adjacent State a right of territorial sovereignty over the sea within a marine league of the end of the reef, and may it in virtue of its territorial sovereignty over the waters forbid any foreign State from mooring a light-vessel at the end of the reef, to mark its termination, and to denote where the deep-water channel commences? These are not imaginary difficulties. The question has recently come under discussion between the North German and the Danish Governments, with re-

spect to the Giedser Reef, which runs out from the Island of Falster, the south-easternmost of the Danish islands, towards the opposite mainland of Germany. The distance between the Danish and the German shores may be reckoned at eighteen miles, the Giedser Reef running out from the Danish shore to a distance of about seven miles; then follows a deep-water channel, and then again a shallow sea, and a high dangerous coast on the German side. The commencement of the Giedser Reef, where it is connected with the island of Falster, is marked by a lighthouse, and the reef itself has been provided with Danish beacons, brooms, and other sea-marks; but such sea-marks are of little aid to the safe navigation of the channel on a dark night. It happens, however, that nearly all the vessels passing through the Giedser channel are destined to German ports, and the absence of a light-vessel moored at the extremity of the reef has led to a great number of shipwrecks on the reef. Influenced by these considerations the North German Government determined to place a lightship at the end of the reef, and without previous consultation with the Danish Government prepared an estimate to be laid before the North German Parliament on its meeting in February last, of the sum which would be necessary to build two light-vessels, one of which should be moored over the south end of the Giedser Reef, and the other should be kept in reserve. The Danish Government, however, has objected to this proceeding on the part of the North German Government, and has placed a light-vessel at its own expense on the south-east end of the "Giedser Grounds." On learning this the North German Government has withdrawn that part of its estimates from the Budget actually laid before the North German Parliament, whilst the Danish Rigsdag has voted a supply to maintain the light-vessel. But how stands the international question of sea-tolls? The Giedser light-vessel will be maintained chiefly for the aid of vessels destined to or coming from German seaports, but according to the hitherto received rules of international law such vessels are not liable to contribute towards the expense of maintaining a Danish sea-light, unless they should enter a Danish seaport, although their course may lie through the territorial waters of Denmark. This is not

equitable, nor is such a rule encouraging to nations, which may be willing to set up and maintain sea-lights, of which the benefit will be enjoyed by passing vessels trading between distant countries, equally as by vessels which are bound to their ports. We will take another case to illustrate the inconvenience of the existing practice. The canalisation of the Isthmus of Suez has led to a great revolution in the course of trade between Europe and the Trans-Isthmian ports of Asia, and the safe navigation of the Red Sea and of the Gulf of Aden has become a matter of permanent interest to the commerce of Europe with Persia, India, China, and Japan, seeing that upwards of three millions of gross tonnage traffic passed through the Suez Canal in 1876. This commerce is no longer a monopoly of one or two European States, but it is open to the merchants of all Europe and of all Asia. But what nation shall light the common seaway for the aid of navigators coming from the East, so as to indicate the dangers which beset the entrance of the Gulf of Aden? For instance, a light would be highly desirable on Cape Guardafui, and another light on Ras Hafoun, which is a headland a little to the south of the entrance of the Gulf of Aden, and on which steamer after steamer has been recently wrecked coming from the south and east with the intention of making a course to Europe by the Red Sea and the Suez Canal. The points, however, upon which it would be desirable to exhibit lights to approaching ships, are on a barbarous coast, and the Somali wreckers would probably be unfriendly to the keepers of the lighthouses, in which case they would have to be protected. It remains to be decided who shall place upon these headlands the required lights, whether the Government of Egypt, or the Anglo-Indian Government, or a concert of the Powers whose subjects have a common interest in the navigation, and further upon what principle sea-tolls should be levied upon passing vessels. There need be no difficulty in the collection of such tolls, if the States, whose merchant ships benefit by the lights, can agree upon a common tariff of dues from all passing vessels.

The question of sea-tolls for passing lights has a still wider bearing. The application of steam power to ocean navigation

induces vessels of commerce to hug the coast in order to make a shorter course than sailing vessels were in the habit of making, and so they incur dangers from rocks and shoals, upon which no sea-marks have been hitherto affixed, and which are sometimes within a marine league of the mainland, to which such rocks and shoals are, by international law, considered to be appendant. But who shall compel the State which has occupied the mainland to light the seaway within its maritime zone? or what Comity of Nations has any claim upon her to incur the expense of so doing, unless all passing vessels contribute their quota towards the expense of maintaining the lights? Nay, if the adjacent State, in virtue of its adjacency, has an absolute right of territorial sovereignty over the sea to the extent of three miles from the land, it may keep the most convenient seaway along its coasts in a condition of innavigability. This is not in the interest of humanity, and the true interest of a nation is never at variance with the interests of humanity.

The application of steam power to ocean navigation has induced nations to concert a common system of rules for the navigation of vessels on the high seas with a view to the prevention of accidents from collision. It has been found, that the two ancient cardinal rules of navigation, namely, that vessels going free should always give way to vessels on a wind, and that the vessel on the port or larboard tack should always give way to the vessel on the starboard tack, are insufficient for the safe guidance of vessels navigated under steam and not under sail. Great Britain has set the example in framing a new body of rules for the navigation of British vessels, and has empowered her Admiralty Courts to regulate their judgments in accordance with those rules in civil causes of damage resulting from collisions between British vessels on the high seas. She has also entered into treaty arrangements with the other maritime Powers, that their vessels shall be navigated under the same system of rules, and she has authorised the Admiralty Courts to apply the new rules to all vessels, whose flag has been brought, by the consent of its Government, within those rules. The responsibility, however, of mariners who navigate the high seas is, at present, limited to making com-

compensation for the damage resulting to ships and their cargoes in cases of collision, and such compensation is for the most part paid by the owner of the vessel, under the ancient law of the sea. However culpable may have been the conduct of those in charge of the navigation of either vessel short of a malicious intention to destroy the other vessel, which would be a piratical act, the Admiralty Court is not in the habit, in modern times, of exercising a criminal jurisdiction in the matter. Yet it would seem to be in accordance with reason, that where States have agreed upon a common body of rules of navigation for the prevention of collisions, they should agree upon a common system of penalties for the non-observance of those rules by the persons in charge of the navigation of vessels which come into collision. This agreement is the more necessary, because the modern theory of a ship being the territory of the nation under whose flag it sails, would otherwise be in the way of any other nation exercising coercive jurisdiction over those on board of it, in respect of any misconduct on their part, whilst it is on the high seas. A Bill, indeed, has recently been laid before the British Parliament for the purpose of enabling the British Courts, which exercise Admiralty jurisdiction, to exercise their jurisdiction in respect of offences committed by persons on board foreign ships within the territorial waters, as they are termed, of Her Majesty's dominions, which waters, for the purposes of the Act, are defined to be any part of the open sea within one marine league of the coast, measured from low-water mark. If it be assumed, as the Lord Chancellor of England has assumed in introducing this Bill into the House of Lords, that this maritime zone is to be considered in the present day as within the territorial sovereignty of Her Majesty, and if, for the purpose of illustrating Her Majesty's right of territorial sovereignty over such portions of the open sea, his lordship has with some reason invoked the claim of the North German Government to a similar territorial sovereignty, as publicly placed on record by it in its Fishery Instructions, such a limited revival of the criminal jurisdiction of the Admiral's Court would be but a poor instalment of justice to the shipowner; as, where one fatal collision, from the non-observance of the Sailing and Steering Rules, takes

place on the high seas within territorial waters, twenty collisions or more happen on the high seas beyond those limits. The Admiral's Court at present has civil jurisdiction over all such collisions in every part of the high seas, and over vessels of all nationalities. If it be found expedient, owing to the frequent non-observance of the new rules, for the Admiral's Court to exercise coercive jurisdiction over persons in charge of such vessels, and legislation is necessary for that purpose, because the coercive jurisdiction of the Admiral's Court in such matters has fallen into desuetude, or for other reasons, it is hardly worth while for the British Parliament to legislate in so meagre a manner on so large a question, and to content itself with providing a remedy for so great a mischief, only in cases where vessels come into collision within the territorial waters of Her Majesty's dominions.

Besides, the modern theory of a ship on the high seas being part of the territory of the nation under whose flag it is navigated, is calculated to raise a conflict of territorial jurisdiction, even where the legislation of the British Parliament is on so small a scale. Already a note of alarm has been sounded in North Germany, and the Bill, as it has passed the House of Lords, has been objected to on the grounds that its purport is to declare the masters and crews of foreign vessels, sailing within the territorial waters of her Majesty's dominions, to be subject to the criminal law of England for any act committed by them on board of their own vessels, which would be an indictable offence according to the law of England, if committed within the body of an English county. The Bill is so worded that it is *prima facie* open to such an interpretation, and the *North German Gazette*, of March 14, has propounded a question of this kind. "If a British subject on board a British merchant vessel, which, whilst it is on a voyage from England to a German harbour, passes the Great Belt within three miles from the Danish coast, were, when the vessel was so passing, to commit an act on board of her, which is an indictable offence according to the law of Denmark, would the British Government acknowledge the competency of a Danish Court to proceed criminally against the British subject, and to punish him in accordance with the provisions of the Danish Law?" We take the important question of

criminal jurisdiction, which has recently come to the front in consequence of the collision between the German vessel, *Franconia*, and the British vessel, *Strathclyde*, whilst they were navigated on the open sea within a marine league from low-water mark of the British coast, to be, whether States which have formally agreed, that certain rules of navigation shall be observed by their respective subjects in navigating the high seas, and which have entrusted to the Courts of the Admiral, or to equivalent tribunals within their respective dominions, civil jurisdiction in respect of damage to property resulting from the disregard of those rules, should not also entrust to the Admiralty Courts a criminal jurisdiction, and authorise them to punish those who transgress those rules, and thereby cause the damage. The measure of punishment, however, in such cases, should not be an arbitrary measure determinable by the law of the State before whose Admiralty Court the parties happen to be convened, but by a Common Law concerted by the same States, which have adopted the revised rules of navigation as the Common Law of the sea. England has taken the lead in revising those rules, and while she has recommended them to the acceptance of other nations by her own adoption of them, she has forbore to impose them on foreign vessels without the consent of their respective Governments. It would disarm opposition to the revival of the criminal jurisdiction of the Admiralty in such matters, if the same courtesy of action were observed by the British Government in completing their legislation on the subject of collisions on the high seas; and if, whilst Parliament authorised the Admiralty Courts of England to visit with penalties the misconduct which has brought about any such collision, those Courts should be restrained from exercising their criminal jurisdiction in the case of foreign vessels, until the Governments, under whose flags such vessels are respectively navigated, have intimated their willingness that their subjects, equally with British subjects, should be punished for the non-observance of the regulations, which they have concerted in common for the prevention of collisions at sea.

TRAVERS TWISS.

A FEW WORDS ON IRON AND STEEL FOR SHIPBUILDING, &c.

IT is a common saying that we live in an age of progress, yet it may well be doubted if advantage is fully taken of all the great resources which nature has pre-eminently conferred on Great Britain. Not long since the whole country was drifting into a self-complacency which has severely injured trade, by unsettling the minds of the majority of the working classes as to the nature of the principles which govern it. They appeared to think that when prices were forced up by combination to an unnatural level the results were to stand for ever. But the rude shocks of competition and its consequent results, have awakened Englishmen to the fact that other countries can successfully mine the coal, and smelt the iron, and make huge castings, and ply the loom, to an extent which at one time seemed impossible. In defiance of what trade delegates may hold forth or workmen affect to believe, foreign manufactures are gradually supplanting many which at one time appeared to have exclusively taken root in English soil. Many great political economists also affect to see no danger to our mercantile supremacy in this flooding of the markets of the world with the produce of our rivals, and speak of the absence of capital as an insurmountable barrier to their progress. Capital is the child of labour, and where there are willing hands and good security it will find a resting place and fructify, as it ever does, under such favourable circumstances; while, like the sensitive plant of Central America, it instinctively closes up at the approach of danger. Holland has created capital out of the sand dunes of the German Ocean, the beds of morasses, and even the bottom of her lakes, until individually she is one of the richest countries in Europe. With such evidence, can there be a doubt of the ability of more favoured nations to follow a similar path. At no remote period a foreign flag was not often seen in any of the great commercial ports of India, China, or the West Indies; yet at this moment they have nearly the whole of the heavy goods trade, and no inconsiderable portion of more

valued freights. The steam fleets of Hamburg and Bremen may now be met in America and the Spanish Main, bidding for freights which were formerly carried exclusively in English bottoms. One of the great staples—tobacco—is almost monopolised by a German line. We all remember the witticisms which were launched against the first attempts of Germany to become a Naval power. *Punch* is silent now, and finds other subjects for caricaturing. It would add to his fame if he were wiser in his conceits, for the perseverance of a race which is not to be daunted by failure, has already made its mark on an element upon which Englishmen, until recent times, imagined they had no rivals. This has been accomplished under disadvantages which might well have made a more favourably placed people pause, as their limited coast in the bight of the North Sea is full of shoals, is low, is destitute of good harbours, and is on a dead leeshore, with all the prevailing winds. At one time no undertaking ever offered a less chance of success. It is now completed—ships, crews, and harbours—and in a few years the new creation will become an important factor in European complications. Such a result proves that modern science, backed by an indomitable will, can dispense with accumulations of capital until it can be exacted from conquered states, a proceeding which the plundered will neither forget or forgive. The most fatal weakness which can come over individuals or nations is the undervaluing of an enemy, and it is one from which England has suffered in a pre-eminent degree in recent times. It caused the loss of the thirteen colonies, the capture or destruction of several men-of-war on a subsequent occasion, the Indian Mutiny, and many other disasters of a similar nature. May she take warning from the past and regulate her conduct accordingly in the future.

In arts and manufactures the same indifference has begotten competition, which has seriously affected the staple industries of the country, and it is to be regretted that a large portion of the injury has arisen from causes which the merchant princes of the last generation would have scorned to entertain. The Hindoo, after washing his highly-sized cloth in the waters of the Ganges, does not recognise it as the same material which a few minutes before was apparently thick and glossy. The African, as

he looks at his shattered hand and broken gun-barrel, or, when face to face with the wild beasts of the forest, finds his powder will not send a bullet into the head of the elephant or the buffalo, curses the dishonest trader to whose rapacity he may probably owe the loss of his limbs or his life. If enormous capital be absolutely necessary before commercial enterprises can succeed, how comes it to pass that America can produce rifles and send them to Constantinople at a price which this country cannot compete with? How comes it to pass that the artillery of the great armies on the Continent and the heavy rifled guns on the shores of the Bosphorus, the Baltic, and the Mediterranean should be the work of German forges, while not a single order has reached this country since the commencement of the Russo-Turkish war? It would be idle to say that this arose from a regard of the neutrality laws, or even from a higher principle; the love of gain rises superior to either. How comes it to pass that the locomotives from the factories of the United States are scaling the Andes, or running on the plains of Peru, when the roads on which they ply are the offspring of English capital? How comes it to pass that the iron castings and bar iron of Belgium are constantly finding their way into the seats of English trade, and underselling rivals on their chosen ground? Instances might be multiplied, but there are unmistakeable indications that every year the struggle for the custom of the world will become more intense, and the results more uncertain, unless the masters and working men of England resolve to work together and redeem a prestige which has been rudely shaken by recent events.

To aid this great work, the genius of the engineer is absolutely necessary, in order to more fully develop the hidden powers which nature only yields to patient research, and to make them serviceable to the uses of man. For centuries the great work has been slowly progressing, but artificial wants have during recent years increased to such an extent as to imply that the time has arrived for the advent of one of those great inventions or improvements which mark an age.

For some time the consumption of fuel per horse-power has not sensibly decreased, and men have anxiously watched the numerous

experiments which have been tried with feelings akin to those who are aware that the advantages with which they commenced life are slipping from their grasp. To regain that ascendancy another start is necessary, and when patient research has developed the means by which one pound of coal will do double its present amount of work, we shall enter on a new phase of prosperity. For the want of this factor, foreign merchant navies have long been gaining on the English as before described. When it is discovered, the cheaply worked sailing ship of the Northmen will disappear as surely as the once famed and much vaunted American liner has before the Cunard and the Inman steamers.

At present, economy in manning and equipment of steam vessels is carried, in many instances, beyond the limits of prudence and safety, therefore retrenchment cannot be made under those headings. Indeed, it is highly probable that the State or the great insurance corporations will, before many years have elapsed, step in and demand legislation on the subject, for life and property alike appear to suffer from its omission, notably in the grain and coasting trades. A steam ship of 1041 tons, recently wrecked, had a crew of deck hands amounting to four all told. In other words, one seaman, one ordinary to work the winches, the carpenter, and a boy. This is an extreme, although not an exceptional case, but it goes to prove that the most elaborate machinery cannot economise any more in that quarter. The only hope of a further reduction of expense now depends on scientific discoveries which may be utilised by practical men, until the whole carrying trade of the country owes its transport to the agency of mechanical power. The days of propulsion by sail can never again be highly remunerative around the shores of the United Kingdom. Men may lament the decay of ancient seamanship, but cannot change the inevitable. They may with equal reason regret the extinction of the Knights of Malta.

It appears singular that with iron in unlimited quantities in so many of the counties in England, so little comparative progress is made to utilise it. In this particular we are far behind the United States, although their command of every species of timber for building purposes is far in advance of that of the United

Kingdom. In all the principal cities and towns the rafters, the shop fronts, and fittings of every description are cast or wrought iron, notwithstanding the expense is far greater than what it would be in England. From this fact it is reasonable to assume that architects still love to cling to old traditions in lieu of entering on a new field. If by any mode of reasoning they could be induced to adopt the American system, the impulse it would give to the workers in iron cannot be estimated, and this without injuring existing trades. Whatever may be advanced to the contrary, as matters of fact the introduction of railways increased the value of horses, the introduction of iron shipbuilding, the wages of shipwrights, and the more universal adoption of iron in the building of houses would, in all probability, ultimately increase the earnings of joiners and house carpenters, by introducing improvements of style which need not be dwelt on here. However, the inexorable laws of supply and demand will assuredly force iron into more general use, for year by year the supply of convertible timber is growing less, and a forest which has been once felled is seldom replaced. If it were, at least two generations must elapse before it reached maturity. From this serious drawback iron is wholly exempt, requiring but the skill of the miner and the smelter to raise it in unlimited quantities. In no other country up to the present time has the precious metal been found in such workable sites, or so near to the fuel which is required for extracting it. Vast as the mines may be which are opened up in the United States, their locality is generally remote from the great arteries and centres of commerce, thus rendering the cost of transport a serious item before reaching the market. Under anything like equal circumstances, this will long be a drawback on the energetic race across the Atlantic; so much so, that however they may strive to rival England in foreign markets, nothing short of misunderstanding and strikes in this country can give them a chance of success. Unfortunately, they have been of such constant occurrence during recent years as to damp the spirits of those enterprising men to whom the world is so deeply indebted. It is not going beyond the limits of probability to state that if the time which has been lost during

strikes in the shipbuilding trades alone could be regained, the labour would complete a coasting fleet of iron steamers which might not only have tended to equalise the price of heavy goods throughout the United Kingdom, and to increase our foreign trade by enabling coals to be carried more cheaply to the Continent, but what is of more importance still, would also tend greatly to reduce the death roll of the maritime population. Unfortunately, a lamentable ignorance of the principles of political economy on the part of the leaders of trades' unions has prevented this, and the seeds of distrust between employer and workmen have been so industriously sown, that the two classes stand like rivals, possessing no common interests.

Commerce has been likened to a hardy plant which thrives best when untrammelled with artificial help. When the great political economist penned the lines, strikes and lock-outs were unknown; and when contracts were entered into there was a chance of carrying them to a successful issue on the basis of the original calculation. All this has been changed; and it is not long since the ironworkers of all denominations on the Clyde remained out six months on strike, in the vain effort to force wages beyond the limits, which would not only debar the masters from receiving remuneration for the science and capital employed, but likewise involve them in heavy pecuniary loss. A few years since, £20 per ton could be demanded for the construction of a first-class iron ship, which now may be had for £12. Yet, under the leadership of designing or misguided men, the workmen essayed to dictate unbearable terms to their masters. They failed, as wrong always must, in the end; and the loss which has arisen to all concerned cannot be reckoned by the amount of wages and unemployed capital, but by the distrust it has engendered at home, and the encouragement it has given to rivals abroad. America, hoping that a recurrence of such catastrophes will ultimately drive a large portion of iron shipbuilding to her shores, has already relaxed in its favour the terms of that almost prohibitive tariff on iron and steel, and in future all materials used in the construction of ships are to be admitted free of duty. This is undoubtedly the first step towards a rivalry, which at no distant

period may become formidable, especially if great lines of native steamships are ultimately established between the West Coast of America and China and Japan. English-built vessels now monopolise the lion's share of this lucrative traffic; but Americans are not slow to copy what is really useful.

Mr. Brassey touched on dangerous ground when, at a recent lecture, he announced that the peculiarly-trained touch of the English artisan made him superior to any in the world. There are grave reasons for believing that, when circumstances call it forth, the hands of our Transatlantic brethren will in nowise be less cunning than those of our own. Up to recent times they have had no inducements to finish their work in a style similar to that of this country; yet in many species of tools and agricultural machinery they already take the lead. Even the thoughtful and highly-educated German acknowledges this superiority, and is calling on his Government to more heavily weight the imports of the ingenious and self-reliant inhabitant of the New World. It is one of the triumphs of the engineer that his genius has enabled this almost impossible innovation to be accomplished—an innovation which the most far-seeing men of the last generation could not have anticipated.

Shipbuilders appear to use iron more extensively than the members of any other profession. In none has it been of such vital importance to the welfare of the country, and its introduction was most opportune. The woods best adapted for the purpose of the naval architect had become scarce not only in England and the Continent, but in foreign countries. The African and Indian forests had been felled in almost every accessible locality on the banks of the great rivers and estuaries, and that which still remained inland failed to be of service for the lack of transport. Statesmen were talking of interdicting the felling of oaks, except for the construction of ships of war, when the substitution of an inexhaustible material set the question at rest for ever; and the grand old trees, no inapt representatives of the race who dwell around them, have been spared to adorn the landscape around English homes.

A movement has recently been inaugurated for the introduction

of steel in lieu of iron for shipbuilding purposes. Of course, if successful, it will form a new starting-point in the art of enabling the merchant to have a vessel 20 or 30 tons per cent. under the present weight—no mean advantage in trades where the carriage of deadweight forms the most remunerative portion of his business. The innovation will have to be conducted with more than ordinary skill and care, from the fact that a rent, which might be of no practical importance in a bridge or a viaduct, might be fatal to a ship. The latter is subjected to strains which test the peculiar qualities of the materials forming the hull in a very marked degree; so much, indeed, that an unusually large factor of safety is adopted by all the great corporations when laying down their rules. Experience and careful study have barely mastered the laws which are necessary to be observed for the safe construction of iron vessels, when new have to be adapted in order that a higher classed metal may be introduced to supply its place. Great difficulties are certain to be met with at the outset. One of these—corrosion—appears to be almost insurmountable, and likely to deter ship-owners and shipbuilders from bringing it into extensive use. There are others which, in a practical point of view, will always cause anxiety, such as docking, or lying in the tide-way of a rapid river, notably the Mersey or the Thames, during strong spring floods and gales. The rough knuckles of granite quays on a lee shore require a ship, when docking, to possess other qualities than elasticity and tensile strength, if her sides are to be preserved from bulging, or even fracture. In a similar manner the iron-plated sterns of the Runcorn flats, with their heavy lading of coals, or salt, or iron, would become dangerous to materials lighter than those now in use. Therefore, in making reductions, the laws of stiffness will have to be considered as well as the laws of strength, not only in what has now been mentioned, but in another respect still more important, which the reader will no doubt readily comprehend. The ship being a huge girder, with a top and bottom flange, and a connecting web in the form of topsiders, it is of the utmost importance for the true working of the machinery that all possible rigidity should be given to it. This cannot be secured without a certain thickness of the

material employed, for, however great the tensile strength may be, it is only one of the indispensable factors demanded. The stems of the magnificent steamships of the White Star Line, during heavy weather, appear to rise and fall through an arc of 8 inches, as measured by an imaginary line, on the break of the forecastle, by an observer close forward. A stronger but more ductile material would probably increase this to a dangerous extent. It is, therefore, evident that great caution and careful experiments will be required before steel can be largely introduced in the plating of the larger class of steamships employed in heavy carrying, and, it may be added, heavy driving trades.

The breadth of lap in their steel plates might probably be increased with advantage in double riveting for stiffening purposes, but not in single, for the caulking of the seam would present greater difficulties in the latter than it now does. It would not be desirable for this reason to have a greater distance between the edge of the plate and the periphery of the rivet than what is universally allowed by scientific and practical men to be the best for all purposes.

There is still a doubt as to the efficiency of steel rivets, and Her Majesty's ships *Mercury* and *Iris* have been wholly fastened with iron. Under these conditions, the butts being the weakest part of the structure, extra precaution should be taken to make them approximate to the strength of the plates they connect, by an additional row of rivets wherever the strain is great. This plan has in all likelihood been adopted, otherwise the stronger material will more severely test the goodness of the joints than ordinary iron plates would do. For three-fifths of the length amidships, or in broadside ships the whole length of the battery, the butt straps should be treble riveted from the sheer strake to the neutral axis. The general custom now is only to double rivet, with the exception of the sheer strake. Messrs. Harland and Wolff have, in the construction of their ocean steamers, gone far beyond the requirements of any existing regulations on this important point.

In the construction of men-of-war, expense is not so much an object as efficiency, and no difficulties are likely to crop up on questions of finance. But in merchant ships, where economy is

one of the primary laws governing the owner and the builder, the cost of an extra row of rivets in a large number of butts becomes of grave importance in times of high priced labour. Subjects of this nature must be left to regulate themselves. It is the profession of the engineer to ascertain what is practicable, and when that is accomplished to leave the monetary details in other hands. His speciality is to make much out of little. Good housekeeping is easy with unlimited means.

The mail steamers on the Atlantic cannot without serious risk reduce the thickness of the plates near the water-line owing to the danger of penetration by ice, which, in spring, may not only be found in the neighbourhood of the Grand Banks, but in all the great commercial estuaries from the Chesapeake to the shores of Newfoundland. Anderson, in his highly useful manual, says there are no reasons for believing that iron is more brittle in winter than in summer, but qualifies the statement by adding that his experiments were made under cover. It is certain that seamen will not share his opinion, for they have a great dread of the action of intense frost on the plating at the water-line when steaming through an ice-field, especially if it be in hummocks, or greatly denuded by the weather. In this condition, it assumes a lustrous greenish hue, not unlike the tint of the glass which still may occasionally be seen in the cottages of rural districts. At this stage, granite scarcely surpasses it in hardness, and numerous accidents bear out the accuracy of the seaman's reasoning. In the winter of 1874-5, a large percentage of steamers in the North American trades met with serious damage to their bows or propellers, and one, the *Vicksburg*, burst the plates under the counter, and foundered in the vain attempt to back out of the pack. Of course, the theory nursed by seamen may be erroneous, but they are so thoroughly imbued with its correctness, that only practical tests will convince them that their assumption is founded on prejudice. The advocates for steel rivets assert that the defect which exists from burning may be obviated by more care in heating. Whatever may be done within the walls of a foundry, no precautions which can be used in a shipyard will prevent it. Rivet boys cannot be expected to study

the temperature when they and the riveters are employed on piecework. Therefore, until steel can be tempered to stand without injury the same rough treatment as iron, there is not much hope of its being generally adopted in the construction of ordinary vessels, except for deck-ties, stringers, and bulkheads. It is unfortunate that the stiffness as well as the tensile strength of all parts which form a ship are tried in turn. If she grounds on a stony place, irregular bumps severely punish the spaces between the frames, and in some instances, puncture them badly. In a heavy seaway, the decks, sheer strakes, stringers, and bottom, are alternately exposed to tensile and compressive strains, and in docking or loading on a rapid river, the side plating is often tested to the utmost limits of endurance. Take for an example a case of a long steamer entering one of the northern basins on the Liverpool side of the Mersey, which, during north-west gales, have no shelter from the Cheshire shore. But for that peculiar action of the waves known to seamen as the undertow or backwash, it would, at times, be impossible to drop alongside of such formidable walls. Occasionally, seas roll over the summit as it might do in the open, and sends showers of spray to a considerable distance. The danger is in places increased by the want of a bold sweep at the corners, and also by the walls being built perpendicularly in lieu of with a slight curve. No amount of ordinary wear and tear strains and punishes a ship so much as the treatment they sometimes receive from these causes, which certainly might have been avoided when the works were planned. Injuries are often visible in the form of bulged plates, broken rivets, and cracked frames, and when the position of the ship is considered it is not to be marvelled at; she is converted into a huge lever, with the bluff of the bow for a fulcrum, and all abaft it for the long arm, to which may be attached one or more tugs backed by a powerful steam winch to break her round.

Three years since, the writer was requested to examine and report on the construction of a new wharf on the Hudson river, which was intended for the use of the steamers of one of the great mail companies. Through an oversight similar to that pointed out, the corners were badly rounded, and to make this defect more

serious, they were lined with deep angle plates from the platform to mean low water level. The probable danger was pointed out to the gentleman who had designed the structure, and a sketch sent to Liverpool to illustrate it. No steps were taken to remedy the evil, one party alleging that it was not their business, and the other that the error, if it was one, should have been pointed out at an earlier date. The result was, that the second steamer which essayed to enter when the freshets were running down, stove in one of her bows, thus causing delay and expense. After the mischief was wrought, the corners were supplemented with circular turret-shaped projections, designed by the writer, and since their erection, not the slightest injury has been sustained by any vessel. The American engineer was so much pleased with the simplicity and efficacy of the plan, that he has since announced his intention of adapting it in all docks or jetties, but in lieu of attaching them like patchwork, they will, for the future, form a portion of the permanent piling.

There are good reasons for believing that until experiments have convinced the shipbuilder of the degree to which he may test steel, it will only be largely used in the construction of men-of-war of certain classes, and packets for Channel service. In both, expense is not so much an object as lightness and efficiency, and neither are much subjected to the rude tests of strength which so frequently try the ordinary merchantman. Further, the cargoes of mail packets are seldom heavy, neither is space such an object as to prevent all the important parts of the hull from being made accessible for scaling and painting. Experience demonstrates that when this is carefully carried out, there is practically no limits to the duration of the plate. Whether Nature really holds in her laboratory an antidote to oxidization is uncertain, but we do know that up to the present time the highest chemical science has failed to find one. The greatest scientists have not been rewarded with a glimmer of success, although pretenders of all denominations essay to make the world believe they have solved the great problem. In despair, at the failure of numerous patents, one of the largest steamship companies in Liverpool has recently given orders that

common lead paint is now only to be used. In the North Atlantic trade, where ships do not remain long in port, this may stand well, but in tropical seas or foul waters it does not meet the case. A few days of calm weather under the equator, enables animal and vegetable productions to attach themselves to a ship's bottom with marvellous profusion, and when this has commenced, there are no means of checking the advance of both.

It will be interesting to note if iron and steel work harmoniously together; under what conditions, if any, wasting will occur to either, and whether the superior tensile strength of one will be in anywise detrimental to the other. It is scarcely possible that the former occurs, but so many singular combinations take place in Nature, that it will be well to adopt every precaution. The latter is worthy of consideration, from the simple fact that the melting points of iron and steel being different, expansion may cause irregularities in practice which may not readily harmonize. In certain anchorages, chain cables after being submerged a few weeks are deeply scored, so much indeed, that the fibre of the iron stands clearly out, and in places cells resembling the half-section of those of the *teredo navalis* in timber may be traced. Few who have not examined a specimen of the links on the spot, would credit that so much mischief may be done to one of the hardest of materials by some unknown cause. When heaving in, the rust may be taken off like paste. It easily washes away, leaves no trace of weed or shell behind, which almost infers that galvanic action is the cause. Sailors attribute it to an insect, but whatever it may be, the injury arising from the submergence of a few weeks exceeds the ordinary wear and tear of years.

The above statement may be deemed irrelevant to the question. It is simply introduced to show that unexpected causes sometimes throw serious obstacles in the way of great innovations.

W. W. KIDDLE, Associate, I.C.E.

COLLISION CASES IN COURT.

IT is a matter of serious consequence in a country like this, that there should be in our Courts of Justice, having what may be regarded as concurrent jurisdiction, something like unanimity in dealing with questions of fact, and in arriving at decisions upon them. Nothing, of course, is more common, or, indeed, more salutary, than that the decisions of our Courts of Law should be subjected to review, and that the Courts of Appeal, before finally disposing of a case submitted to its arbitrament, should have a full statement of the case as submitted to the Court below, with any additional facts that may possibly throw light upon it and upon the decision appealed against. But it is a different matter when two Courts of First Instance, so to speak, arrive at divergent conclusions on the same state of facts, and pronounce decisions which are not both reconcileable with the evidence on which they are professedly founded. We are led into this line of observation by a consideration of the decisions of the Wreck Commissioner and of the Judge of the Admiralty Division of the High Court in the recent case of the collision between the barque *Brothers* and the steamer *Vindolana*. The facts of the case are few and simple. Both vessels at the time of the casualty were on a voyage from Bristol to the United States. About 6 a.m. on the morning of the 10th November, the ships were in lat. 51° 38' N., and long. 7° 22' W. The wind was from the westward, blowing a moderate gale; the weather clear, but overcast. The barque was under shortened sail on the starboard tack, heading S., and making some three knots an hour headway. The steamer was heading N.W. by W. $\frac{1}{2}$ W., and making from four to five knots an hour. Both vessels, it would seem, carried lights, but those of the *Brothers* were carried too far aft, as deposed by the witnesses of the *Vindolana*, to be visible to the other ship. But the time being 6 a.m., and the weather clear, there seemed to have been nothing to prevent the steamer seeing the barque in time to avert a collision. The vessels approached each other—the steamer ported, and brought

the barque right a-head, and at the same time reduced her speed ; but it was too late, the ships came together, the steamer striking the barque amidships on the port side, inflicting serious damage. There was a suggestion that the master of the *Vindolana* did not stand by to render assistance, but this suggestion or charge was abandoned, and, in any case, is beside the points of the case to which we desire to direct attention. The Wreck Commissioner, after a very careful investigation of the facts as adduced in evidence, came to the conclusion that the *Brothers* kept close-hauled on the starboard tack, and that the collision was brought about by the *Vindolana* continuing her course too long without altering her helm (through a defective look-out), and thus going into the *Brothers* port midships. "The *Brothers*," continued the Commissioner, "was in fault in not carrying her side-lights in the proper place. They were carried too far back, so that they were invisible when the ship was approached from directly forward ; but, at the same time (about 6.30 a.m.), and in clear weather, there was nothing to prevent the vessel herself (the *Brothers*) from being seen at a considerable distance." The certificate of the master of the *Vindolana* was suspended for six months. No punishment was inflicted on the master of the *Brothers*. Now let us follow this case to the Court of Admiralty. The same facts were produced in evidence before that tribunal. The witnesses were examined and cross-examined by competent counsel, but there was nothing new elicited, and, so far as we can judge, no new light was thrown upon the narrative of the collision. Yet the decision of the Court was, both parties to blame ; the *Vindolana* to blame for not getting out of the way on seeing the barque a mile off ; and the barque to blame for not carrying her lights in a proper place, in compliance with the provisions of the Statute which directs that the side-lights shall be "so fixed as to throw the light from right a-head to two points abaft the beam, and of such a character as to be visible on a dark night with a clear atmosphere at a distance of at least two miles." Now, if the steamer saw the barque at the distance of a mile, and did not avoid her, it is clear the steamer was solely to blame. It was the duty of the steamer to

keep clear, and the duty was neglected and hence the collision. Yet the Court of Admiralty holds both vessels to blame. The Admiralty rule in such a case is founded upon the principle that damage occasioned by a common fault shall be considered a common loss. "If the owner of one ship bring an action against the owner of another ship for damage by collision, and both ships are found to blame, the party proceeding recovers only a moiety of the damage; if there is a cross action the damages are divided, each party recovering half his own loss." It will be seen, therefore, that the vessel that was wrong in her navigation and the vessel that fixed her side-lights too far aft are placed, by this decision, on the same footing—they are held both to blame—and they must stand to their share of a common loss. But there is this further difficulty in understanding the reason of the decision of the Court of Admiralty. It is stated on the face of the judgment, as it was proved in evidence, that the steamer saw the barque fully a mile off. If she saw the barque at that distance there was abundant opportunity to avoid her, and therefore it is difficult to understand what the position of the barque's lights could have had to do with the collision. The Wreck Commissioner drew attention, it is true, to the improper position of the barque's side-lights, but his decision only went the length of punishing the person really to blame for the casualty, namely, the master of the *Vindolana*. The Court of Admiralty, while clearly intimating that the wrong-doing ship was the *Vindolana*, has held both vessels to blame.

Another case decided upon in the Court of Admiralty has come before a Court of Inquiry newly constituted in a German port under the German law. The Italian barque *Utile* and the German mail steamer *America* came into collision. The Court of Admiralty held the steamer alone to blame. The case was investigated at Bremerhaven before the Provost and four Nautical Assessors, when the Court came unanimously to the conclusion that the *Utile* and not the *America* was the wrong-doing vessel. It is to be regretted that the decisions of our highest Court of maritime jurisdiction should occasionally be at variance, not only with those of the very carefully and ably-

conducted tribunals presided over by the Wreck Commissioner, but should be traversed by similarly constituted Courts established in foreign countries for the investigation of maritime casualties. The subject is one which begins to attract public attention, and will, we fear, continue to attract it. Disappointed suitors do not like to see that the decisions adverse to them are challenged in other Courts. They begin to think, naturally, that there is some uncertainty in the administration of justice, and they will seek for an explanation which it will, by-and-bye, be difficult to withhold.

PUBLIC HEALTH AND PASSENGER SHIPS.

THE subject of the welfare of the seafaring man, and with him the steerage passenger, has been much discussed by the public. Great sympathy has been excited, and the expression of this feeling, to the general satisfaction, has resulted in Government interference: the two classes, seamen and travellers, have been placed under official supervision, and the whole matter of their well-being has been recognised as deserving of stricter attention than was deemed necessary by the private individuals who employed the one and conveyed the other from one part of the world to another. In considering this *interference*, we have, here as elsewhere, to pick our way through many and conflicting interests. There is (No. 1) that of the shipowner. As private property, he looks upon his vessel in a totally different light to that which breaks upon the understanding before the mast. Regarded as an investment, he expects to receive a large return upon the capital he has expended upon her, and to receive it in the shortest possible time. To that end he guards against loss through accident by insuring her; and, so long as she is "taut and trim," and up to her work as a speedy carrier, he spares no reasonable expense in fulfilling his part of any contract he may undertake in which she will be engaged.

(No. 2.) The sailor's interest consists, not in regarding his ship

as a money-making machine for the benefit of the owner, but as to whether she will answer his purpose as a comfortable home for a given time. In this respect he means good quarters and victualling. Jack knows well enough that, in the latter important matter, the quality and the supply of provisions is inferior—or has the reputation of being so—in some companies' services as compared with others, so he naturally goes, if possible, where quantity and quality are good, and ships with those who in the general treatment of his kind stand A 1 at sailors' homes. The rule, therefore, at sea as well as on land is, good masters, good men, and the reverse. It is well to remember this when sailors are punished for refusing duty, and that possibly it may be idleness and discontent on the one hand, with, probably, carelessness and neglect upon the other.

(No. 3.) The interest of the shipper affects this matter in the important question as to whether the kind of cargo he proposes to ship is of a nature likely to interfere with the sound health of those on board, especially if any of such be passengers.

(No. 4.) The interest of the human cargo conveyed is one of the greatest importance.

It may be allowed that if the precautions taken to insure the safe conduct of a vessel and her crew are wisely carried out and dictated by principles of common sense, such a one will be in a fit condition to carry passengers, or, at all events, could easily be made so.

These precautions are, attention to simple sanitary rules, viz.: cleanliness, ventilation and light, destruction of noxious smells, wholesome food. The duty of seeing that the men keep their quarters clean devolves upon the chief officer, that in regard to the galley upon the chief steward, while a daily inspection should be made by the master. It is obvious that if these responsible persons perform this duty one great cause of discomfort will become non-existent—*dirt*.

In the passengers' quarters—and here is understood steerage passengers—this duty is a part of that undertaken by the medical officer in charge of them, and if his authority is allowed and recognised on board, his power in this respect is great. An emigrant

ship is divided into spaces where men, women, and children live, sleep, and eat; in which a certain amount of crowding is unavoidable, and in which, unless great care is exercised, dirt of all kinds rapidly accumulates. These spaces are under the regulations of an Act of Parliament which deals with the amount of air and light admitted to them, with the length and breadth of the berths, their height from the deck above, and distance from that below; also which regulates the exact number of people they shall carry, and appoints officials to see that its regulations are adhered to, and the law not evaded.

In suitable weather the emigrants are required to take to the upper deck, and there remain more or less, except during meal hours, &c. They are also required to keep the berths tidy and the deck clean. All refuse, after meals are over, is collected and thrown overboard. To see that this is done constables are chosen from amongst the passengers themselves, who are under the immediate orders of the surgeon in charge. The single women are looked after in these matters by a matron, who is also directly responsible to the doctor. The men are under no circumstances allowed to smoke below.

It may be stated, that for purposes of cleanliness, a sufficient space should exist between the floors of the bunks or berths and the deck, to allow of proper washing, drying, and dry-rubbing, the latter being very important; and that the regulation half-foot is *not enough* for this object.

Ventilation and Light.

Sailors usually live in the fore-castle. In some new ships it is becoming the custom to build for them a deck-house forward. In one instance, recently under notice, this house contained a number of separate berths, each with a bunk on the top of a set of drawers, a wash-basin, &c., and a looking glass, opening into a mess cabin lighted and aired by a sky-light. Whether this is too much luxury for Jack remains to be seen.

In the first place, the fore-castle is ventilated by a large cowl-headed ventilator, turning of course with the wind; and, if necessary, deck-lights are used. In the second, the deck-house is pro-

vided with windows, and any amount of air can be admitted under control.

The plan of ventilating and lighting an emigrant ship is generally thus. Commencing forward, a space is double bulkheaded off for the accommodation of the single men. Around this two tiers of bunks are arranged, either fore and aft, with a narrow interval between them and the side of the ship, or athwart the vessel, in which case the bulkheads are against the vessel's sides. The first seems to be the best plan, although some owners prefer the other, because it is better to lie with the body as far as possible parallel with the run of the ship, and not at right angles to it, so that in the latter case, whichever tack the vessel is on, the head would be lower than the heels, and the discomfort obvious. For ventilation the small passage left in the first instance, at the back of the berths, allows for a free sweep of air; and as the water-way and scuppers are here also, cleanliness can more easily be enforced. Also, by this fore-and-aft arrangement, a larger space is at the emigrant's disposal in the middle of the compartment, where the tables are placed. At the feet of the berths, small, narrow lockers are constructed to hold mess tins and other articles necessary for daily use, so as to obviate the necessity of having boxes and other lumber kicking about the deck.

Air is admitted by the following method :—1st. The hatch, with two ladders, serves this purpose, as well as being the entrance. This is an opening in the deck, varying in size, over which is securely fixed a saddle-backed covering, with two flaps, into which panes of strong glass are let. These lift up like the flaps of a saddle, and when lashed up, as is always the case during good weather, form an admirable ventilator. In cold nights, or when bad weather demands it, the disadvantage of shutting them is counteracted by running up, through either one or the other flap, or between them, a small cowl-headed ventilating tube. Forward of this hatchway, if required, a similar ventilating shaft is conducted through the deck, but this is seldom really necessary. At the after end of this compartment it is the best plan to build and carry up through the deck-house, which is over it, a square wooden shaft, about 4 feet in length by 2 feet in width, divided so

as to terminate in two shoots, one leading into the space under consideration, and the other into the one adjoining. By this means, with one opening in the deck, after-ventilation is secured in one compartment and forward ventilation in the other. This shaft supplies also light, being protected at its outlet with a similar arrangement on a small scale as is fitted to the hatch. If the vessel is built with scuttles—side-lights for opening—there will be ample light; if she is not, a few deck lights can be let in, seeing that they are of course properly fitted.

The objection to side-lights for ventilation is that they are, unless care is exercised, apt to cause draughts, and also to leak in bad weather. It is best, on the whole, to ventilate and light a confined space of the nature of a ship as much as possible from above.

The plan of the next compartment, the space allotted to married people and children, is much the same; the berths are broader and separated from each other by curtains; the hatchway, being amidships, is larger. If the plan suggested just now was carried out, there would be the forward shoot as No. 1 ventilator; the large hatch, with similar covering and ventilating tube as the fore one, as No. 2; and, as is done at some ports, a long shaft built from the deck to the external air, guarded in every respect as already described, making an opening in the deck 7 feet long by 2 feet wide, as No. 3. If a suggestion might be allowed, it would be better, perhaps, to have instead a double ventilating tube with two cowl-heads, one to the wind and the other from it—the latter, being the highest, to act as the up-draught shaft, the former, as the down-draught one, being carried to within a yard of the passenger deck, and—adopting a device used in the ventilation of dwellings—there opening into a box, the sides of which should be perforated with zinc, and covered or lined with thick muslin or some other porous material, so as to allow of a constant stream of minutely divided air passing in. The up-draught tube should not intrude into the space more than 2 or 3 inches, and beneath its opening an enclosed pan of burning charcoal or some other combustible might be placed at a safe distance, so as to cause a rush of air up the tube.

The after compartment of the ship is devoted to the single women, and is ventilated and lighted upon the same principles as the forward compartment. In addition, they have a bath room and other places of convenience for their exclusive use.

In a vessel, then, carrying emigrants, as air admitters there are three hatchways and four or five ventilating shafts or tubes capable of admitting roughly about 260,000 cubic feet of air an hour.

Foul air, from whatever source derived, has this advantage, that in every sense of the word it is above-board, and not difficult to recognise, and that it suggests its own remedy—viz., its prompt expulsion. An open window or door, a breath of fresh air, serves this purpose. It is, however, necessary for sanitary purposes not only to eject it, but to trace its origin, and, when that is discovered, to destroy the cause.

Many persons are under an impression that, of all places under heaven, a ship at sea should be quite free from any unpleasant passengers of this kind. The motion, causing a continuous current of air, in their opinion should be enough to keep her sweet. The fact is, that no confined space so effectually harbours foul air as a ship, steam or sailing.

From bilges alone stench emanate in abundance. Cargoes are stink producers. The exhalations from human and live beings, especially during sleep, are foetid with the "giving off" of ammoniacal, sulphuretted, and carbonic acid vapours and gases. Latrines and round houses contribute their share, so that in no place do noxious particles more rapidly accumulate in the atmosphere. To counteract their bad effects, first of all we have natural ventilation, the use of nature's grand disinfectant, *fresh air*; then water-cleansing, followed by the use of some disinfectant agent, such as carbolic acid, &c. These preventatives can be used equally as well in a full ship as a thinly-populated one. It is usually the rule in emigrant ships to sprinkle the decks with a mixture of sawdust and carbolic acid powder, and to use the latter freely in the round-houses, &c. In the matter of this disinfectant, as with that of chloride of lime, &c., owing to the pungent unpleasant smell emitted, objection has been taken, that the remedy is worse than the complaint, and that it is merely setting up one bad

smell to overpower another. True, as far as the unpleasantness goes; but in the one case the odour, though open to this charge, is at all events wholesome, while in the other, although equally obnoxious, the matter noticed in the air is simply poisonous matter on the move. These disinfectants come under the category of agents which act, not as destroyers of noxious germs, but as arresters of the action of putrefying atoms floating in the atmosphere; they have no power to entirely eradicate such seeds of poison, but they stay them from proceeding any farther in their process of development. The air is an oxidiser owing to the oxygen in its composition. Sea air also contains ozone, iodine, chlorine, all of which are fatal to poisons in the air. Fresh air, whether on land or at sea, by diluting loaded air and oxidizing it, is a destroyer of putrifying matter, and the most efficient disinfectant of all.

It is as well, after a vessel has discharged her human freight, to thoroughly disinfect her, by letting loose for some time in her compartments fumes of either sulphurous, nitrous, or chlorine gases, taking care first to render them air-tight, and after the fumigation to leave them exposed for hours to the action of fresh air.

The bilges should be frequently emptied of their contents and supplied with water in a sweet and inodorous condition.

Another source of unpleasantness is the smell engendered by live stock on board. This is particularly the case in sailing-ships; steamers, being provided with ice-houses, are not so stocked as a rule.

In an emigrant ship the practice is to carry, round the poop-deck, fowls and ducks until such time as they are wanted; on the deck aft the forward deck-house, sheep; and in front of it, pigs in pens, the latter being always close to the forward hatchway, leading to the compartment for single men.

Now the only portion of these admirable dietary arrangements which actually fall to the lot of the emigrant, is the unpleasant odour given off from them during life, and the savoury fragrance which steals from them during their preparation for the cuddy-table. This is "rough" on him.

The effluvia from poultry everybody knows to be bad; but, to

put it mildly, the stink proceeding from pigs is infinitely worse, and when it is considered that their gaseous exhalations are continually being poured into the habitation of men, it does not require much scientific knowledge to point out the danger to health, as well as the guilt, of such a deliberate violation of sanitary law. Live stock, *especially pigs*, should not be carried in an emigrant ship. They are not provided for his benefit, and it is unfair that the steerage passenger should be rendered liable to sickness and discomfort by a practice originated for the comfort of a few, and which in these days of preserved fresh meats, is totally unnecessary.

Food.

Whatever may be said to the contrary, every care is taken in the present day to provide both the sailor and the passenger with good food.

On board ship, in the opinion of the steerage and fore-castle, a proficient in the culinary art is not required, although in mail steamers, where "My Lord and the Dook" are liable to travel, one may be desirable. But a good plain cook is insisted on, and, as a part of his qualification, above all, a clean one. Nothing can be more wretched than, during a long voyage, to be subjected to the performances of an indifferent cook, and if to him be added bad food, the calamity is extreme; and yet it is not many years ago that both were common enough. The food and water put on board for passenger and sailor are subjected to strict examination, the good effects of which, apparent in these vessels, react upon those which sail without the Act, as it were, and it is a rare occurrence when any proven charge of wilfully supplying injurious food is, at the present day, brought against either master or owner.

Emigration from these shores has fallen off considerably during the last year or two, not to the East, but to the West; at the same time sufficient numbers of people have left to make their well-being on board a matter of vital importance. Take an Australian emigrant ship as an example. Upon her arrival at her port of destination she is subjected, with her passengers, and the

surplus (if any) of her provisions [she sailed provisioned for 140 days] to a rigid inspection by the Colonial authorities. The ship's doctor hands in his report, and all causes of sickness and death are examined into, all complaints are attended to, and in cases where anything has gone wrong, the owners and the Colonial officials at her port of sailing here are held accountable for any neglect. Also the officials attached to the Emigration Department to the Imperial Government Service at home are responsible to the Board of Trade for their share in the duty of seeing that proper measures for safety and health are carried out, and for strict compliance with the Board's instructions based upon the Act of Parliament.

To this department, in course of time, all reports concerning the vessel's voyage are sent, and the following figures, small as they are, will show whether or not these instructions are obeyed. During the last two years ending December, 1876, and 1877, there left this port bound to North America, including Canada, Australia, and New Zealand, about 23,400 emigrants and ship's crews; out of this number, thirty-five people died, making a death rate of a little more than one and a-half per cent.

All these, with the steamers and ships which conveyed them, as well as the food supplied to them, were inspected under the provisions of the Passenger Act of 1855.

They were individually exposed, not only to the ordinary accidents of life, but to climatic changes as well as those of personal habit, to more or less confinement during a period of time varying from 12 to 120 days, to sea sickness and inevitable discomfort; and, amongst them were a large proportion of children, some aged persons, and also invalids seeking a restoration of health from the doubtful efficacy of a sea voyage.

The emigrant and the sailor, although "cribbed, cabined, and confined," have the means placed at their disposal for travelling in safety and comfort, by the working of this Act; and they experience afloat a freedom from disease and distress often unknown to them in the homes in the old country.

Thanks to the operation of this Act, also, the song of the "Miseries of Poor Jack" is dying out from the land, and with it,

so old hands say, the genuine representative of the British tar. Be it so, peace be to his ashes. The shipowner who once awhile sailed himself before the mast, and carved the figure-head of his Nancy ashore out of his piece of dinner junk, it is true still grumbles about "the intolerance of official busybodies and the damaging of shipping interests, etc." The fact, however, stands out as clear as daylight, that, in the cause of humanity and science, Government interference is effecting valuable results.

All ships carrying passengers, through the constant mistakes of the press, are deemed by "the public" emigrant ships, and everything untoward happening to them, is immediately put down to the slackness of the Government surveys, and so on; so we hear, for instance, of the emigrant ships *Northfleet*, *Great Queensland*, etc., etc.; whereas, in point of fact, such vessels are nothing of the kind. A ship must carry fifty statute adults, other than cabin passengers, before she comes under the denomination of an emigrant vessel.

These remarks are intended to draw attention to the importance of the shipping interest meeting this official interference, ordained by an Act of Parliament, in the same spirit in which it was originated—that of desiring to bring about a healthy condition of ships, sailors, and passengers—and by so doing, if need be with a strong hand, removing everything which stands in the way of so humane an object. They are written also to urge the shipowner to aid the Government in doing its best in caring at sea for those, who, for the most part grossly ignorant of the simplest rules of health and comfort, are dependent upon him for an intelligent and humane exposition of this Act, so far as it regards their material comfort and safety.

CUSTOM HOUSES.—IX.

THE extraneous duties imposed upon the officers of Customs have, from time to time, been many and varied. We have already indicated a few, as, for instance, those of "Quarantine" and "Warehousing." There are others, more or less onerous, worthy of notice, but we must confine the remarks regarding them to a small compass. For centuries the only class of public officials scattered throughout the country, were those connected with the Customs. It was consequently only right that the Legislature should, when new Parliamentary enactments were passed requiring administration at the outports, give the working of them to the Customs' officials. In more modern times, however, the Inland Revenue, Post Office, and Board of Trade officers especially, have shared largely in the apportionment of new work. But still there remains a number of miscellaneous enactments to be administered by the Custom House officers.

One of the principal is the registration of ships under the Merchant Shipping Act, 1854, Part 2. At one time the sale and transfer of shipping were effected by the intermediary of a solicitor, as is the case with land or houses at the present time. But the repeal of the Navigation Laws, in 1849, and the subsequent legislation thereon altered all that; and now a revised "Register" of all ships belonging to the Empire is kept at each port, a summary of which is lodged in London. But although solicitors are still employed to some extent, their employment is not essential, as a clear title can be seen and obtained from the "Register," and the "Bill of Sale," or other necessary documents, may be made out by any ordinary person of business habits. Up to 1873, the Commissioners of Customs were the depositaries of these registration titles; but since then, in conformity with the Merchant Shipping Act of that year, the Board of Trade has performed that duty. Nevertheless, the local officials of each Custom House are the "Registrars of Shipping" at the separate ports. To get an idea of the extent and responsibility of this branch of work, it is only

necessary to state that the shipping registered as belonging to the United Kingdom and Colonies for the year ended 31st December, 1876, amounted to no less than 7,964,578 tons, probably of the value of at least 150 millions sterling. The ports of London and Liverpool, each registered more than a million tons of shipping, and other ports have also large possessions in the same line, entailing a considerable amount of labour and responsibility upon the Customs' officers in regard to the numerous documents required to be inspected, and the various titles to be investigated and enrolled.

Another branch of work is that of "Receivers of Wreck," under Part 8 of the Merchant Shipping Act of 1854. Nearly the whole of this work is done by the Customs service. There are a few "Receivers" who were appointed originally from outside the Civil Service altogether, and there is a limited number of Board of Trade officials who are also "Deputy Receivers," but at most of the ports this irksome duty is performed by Customs' officials. Then there is the Mercantile Marine work of shipping and discharging crews, under Part 3 of the Merchant Shipping Act, 1854. At nearly one hundred ports this is done by Customs' officers—the remainder and larger ports being attended to by Local Marine Boards. In a return presented to the House of Commons at intervals—the latest being 11th February, 1876—the work of this department, in Custom Houses, is detailed, and it appears that for the year 1874, there were 7,013 crews engaged to serve in foreign-going British ships, and 5,826 discharged therefrom. An innovation has, however, recently been made in this respect by the Board of Trade, who have the surveillance of this work, by establishing offices, separate from the Custom Houses, at several of the more important ports, such as Southampton, Cardiff, Swansea, &c. This system will probably be extended, with the increase of our Mercantile Marine demands. A fourth main branch of extraneous duty performed by the Customs, is the collection of lighthouse dues for the Elder Brethren of the London Trinity House. On referring to the Parliamentary return above quoted, it will be found that in the year 1874, the sum of £838,631 was collected at the various Custom Houses in the United Kingdom, and that 206,270 docu-

ments were issued as vouchers for the receipt of the different sums paid. The collectors have no additional pay for this responsible work, save those at what are termed the "Ports of Call," *e.g.*, Falmouth and Queenstown. At those two ports a bonus of five per cent. is allowed, in order, no doubt, to stimulate the collectors in obtaining the dues from vessels bound to the continent; but which, calling at these ports for orders only, would probably sail again without being amerced, if energetic steps were not taken to collect the dues.

In addition to these larger duties, the officers have to attend to the working of the Passenger and Emigration Acts, at ports where there are no regularly appointed Board of Trade officials. They have also to look after the copyright conventions, in the interest of authors; the reports regarding aliens for registration at the Home Office; the Foreign Enlistment Act, for the War Office and Admiralty; the Fishery Convention Law, to protect our sea fishing trade; the Pilotage Act, under the direction of the Board of Trade; and the preparation of the statistics of shipping, imports, exports, &c., for the same department, and the Registrar-General of Shipping and Seamen. Moreover, they have to co-operate, to some extent, with the officers of Inland Revenue, for the prevention of fraud; and numerous payments are made by them to pensioners and others, for Her Majesty's Paymaster-General. Enough has now been said to show that the Custom House is not a "customs" collecting place, pure and simple.

We will now glance rapidly at the progress of the Customs' revenue collected. It is needless to trace the several imposts as they arose, and to display the amounts yielded therefrom; it will suffice for our purpose to regard the most notable features in regard to this fiscal assessment, which have presented themselves in our national history. In order to do so clearly, and present a somewhat succinct view of the Customs rates, and the yield therefrom, it will be necessary to make a few observations on the kind of articles which have been rated. And here we must again refer to Lord Hale. In his tract "Concerning the Customs," *Pars Tertia*, chapter 4, page 139, he observes:—"So it might happen, that possibly these kinds of

port duties were in ancient time all the Customs that were answered, and that by new provisions there might other more considerable Customs arise, and yet the old be retained under the name of tolls, or, it may be, under the name of Customs." His meaning appears to be that there were in addition to the two great divisions, mentioned in a previous article, of the inland and maritime Customs, certain lesser dues, belonging by prescription or charter to some ports, and which by exchange or other cause came into the Royal Exchequer. An account of these dues was commenced, in 1801, by one Adam Champneys, and continued by several other men to the middle of the reign of Edward III. It was entitled, *Consuetudines et Usus Sandwici*, and related to the port of Sandwich. By it evidently certain dues were granted, in 1028, to the monks of Christ Church, *Cantuar* (Canterbury), by King Knute or Canute. A list of them are given, but some items are so obscure in their meaning that even the learned Lord Hale cannot understand them. There are dues on fish, spices, fruits, dye stuffs, leather, &c., enumerated in the old Norman French of the period of Champneys. Take a specimen or two:—*"De Chescun cent de Sturgeon, 4d.; De Chescun Sac de leyn, 2d.; De Chescun last de guires, 4d.,"* &c., &c. In the city of Exeter some similar dues were assessed by the charter of Edward III. For instance:—For every 100 weight of madder, 1d.; for every bale of packing canvas, 3d.; &c., &c.

But these were insignificant or partial assessments, which had a very small place in the Customs rate-book of the kingdom. The time of Edward I. was that in which was settled first, upon a sure basis, the general imposition of the greater Customs—*e.g.*, those on wools, &c. Since his time the records are more or less clear. Before him they are "very brief, dark, and uncertain." The rates first settled appear to have been:—A sack of wool, 6s. 8d.; for 300 "woolfells," 6s. 8d.; for a last of hides, 13s. 4d. The sack of wool was estimated to weigh 392 lbs., and 300 "fells" were estimated to "answer a sack of wool"—hence were charged the same duty. In addition to these "greater" dues, Edward I. received from "merchant strangers" the "lesser," or *Parva Custuma*. They were:—

	£	s.	d.
A tun of wine	0	2	0
Last of hides, exported	0	6	8
Sack of wool, do.	0	3	4
On 300 woolfells, do.	0	3	4
A cloth of scarlet, "dyed in graine," exported	0	2	0
Ditto "graine intermixed," exported ...	0	1	6
Every other cloth, "without graine," exported	0	1	0
Quintall of wax, exported	0	1	0
Other things <i>ad valorem</i> for every 20s. value, imported or exported	0	0	3

Owing to the political uncertainty of the reign of Edward II., the assessment of Customs appears to have been intermittent; but Edward III. seems to have received them *jure hereditaris*, and, being strong and warlike, held to them. These duties, with varying subsidies, appear to have come down steadily to the time of Charles II., when the "Book of Rates" settled the tariff upon a better basis. Some new duties appear to have been imposed in the meantime by Mary, Elizabeth, and James I.; but it is unnecessary in our short notice to give details. By the Act 12 Car. II., cap. 4, the subsidy of tonnage and poundage was granted to the King for life, under some difference on the previous ratio. For instance:—

	£	s.	d.
French wines imported at London, per tun, for natural-born subjects	4	0	0
Ditto for strangers	6	0	0
Ditto at other ports, by natural-born subjects, per tun	3	0	0
Ditto ditto, by aliens	4	10	0
Sweet wines imported at London by natural- born subjects, per butt	2	5	0
Ditto, by aliens	3	0	0
Ditto at other ports, by natural-born subjects	1	10	0
Ditto, by aliens	2	5	0
Rhenish wine, by natural-born subjects, per awm	1	0	0
Ditto, by aliens	1	5	0

"Additional duty" was also assessed upon French, Spanish, Portuguese, German, and Madeira wines. As also a "subsidy" of poundage, namely, 1s. on every £ of merchandise exported or imported; and, by aliens, 1s. more. The "Book of Rates" provided for forfeitures of "uncustomed" goods, goods lost at sea, goods shipped in "carricks or galleys," goods formerly prohibited and then "licensed" for export; prisage not to be charged as Custom. No duty was to be charged for more than the goods entered or landed, and no other duties were to be paid during the continuance of "these, but only the duties enacted prisage, butlerage, and the imposition on coals."

That famous "Book of Rates" was the foundation of our modern systems of imposition of Customs' assessments, and had a successor or addition made to it under George I. The duties of Customs, as has been explained in a previous paper, have been, since the time of Charles II., very much increased in number; and again, since the time of Sir Robert Peel, have been as much curtailed. At one time they reached more than 1,200 articles, and now stand at only seven genuine headings. One hundred years ago, it was said that the Briton was taxed for entering the world; that he was assessed from his head to his foot in all kinds of ways as he proceeded through life, and when he died the tax collector would have something out of him, for the very ceremonies which "wrapped his clay" had a levy made upon them.

Any one referring to the *Imperial Tariff* of the present day, will find the matter stated thus:—Things prohibited to be imported (of such are indecent books, prints, false money, essence of malt, &c.); things prohibited to be imported under certain exceptions (of such are nitro-glycerine, foreign goods bearing the brand of an English firm, &c.); things prohibited to be imported except under certain restrictions (of such are infected cattle, spirits in ships under 40 tons, and tobacco in ships under 120 tons burthen, &c.); things prohibited to be exported on proclamation by Her Majesty (of such are Military and Naval stores, &c.); warehoused goods are not to be exported in vessels less than 40 tons burthen. There are also certain restrictions of a special nature in the trade of spirits with the Isle of Man; and the export of salmon and explosives so far

as entry at the Custom House is concerned. The principal items upon which duty is charged, are spirits, beer, wine, tea, coffee, fruit, and tobacco; there are sub-divisions of this list, such as comfits, eau-de-cologne and preparations having the above-named articles intermixed, amounting in all to forty-eight. It will be seen therefore, that the excision of the tariff has been most effective, and that to proceed much further would be to improve it off the face of the earth. There are no duties now levied on exports, and have not been since 14th August, 1850, when the duty on coal export ceased.

The *tariff*, however, contains another list than the "duty paid." It is called the "free goods" list, and consists of 56 principal headings, with numerous sub-divisions. It is controlled by the Customs' officers, inasmuch as under their supervision the statistics of the trade of the nation are compiled for ultimate publication by the Board of Trade.

In concluding this article, it may be useful to show the gross amount of Customs' taxes, collected at a few outstanding periods of our history, as indicating the progressive nature of the impost. As already stated, the period antecedent to Edward I. is too obscure for any accurate statistics to be obtained. In his reign, however, the science of accounts appears to have considerably developed. Starting, therefore, from his reign, we have compiled the following figures:—

Year.	Amount Collected.	Monarch.
1280	£8,108	Edward I.
1580	14,000	Elizabeth.
1642	500,000	Charles I.
1760	1,969,933	George II.
1815	11,360,000	George III.
1830	17,540,323	George IV.
1840	19,915,296	Victoria.
1850	22,264,258	"
1860	24,391,084	"
1870	21,449,843	"
1877	19,762,000	"

At two periods a considerable "jump" appears to have been

made : viz., first, 1642-1760. To account for this, it must be remembered that the union of the Parliaments of England and Scotland took place in 1707. That a great increase would take place in the assessment of Customs duties is evident from that one fact alone. In the year 1287 the now insignificant port of Berwick yielded the then large sum of £2,197·8s. for Customs dues. It was at that time the chief port of Scotland, and was popularly termed the "Second Alexandria." Compare with that amount the sum collected for the whole Customs of England—£8,411 19s. 1½d.—and a fair idea will be obtained of the subsequent advantage gained by the united national revenue of the two kingdoms. Secondly, the incorporation of the Irish Customs Revenue with that of Britain took place in 1830, which accounts for the addition of so many millions in the short period of fifteen years after the period above given, namely, 1815. That the amount was considerable may be judged from the fact that at the port of Dublin alone the Customs duty has often exceeded a million sterling per annum.

In comparing the table of duties, given above, it will be well, however, to bear in mind that the value of money has greatly decreased. One great authority—Hallam—reckons that the value of money six hundred years ago, was about twenty-five times more than it is now. Upon such terms the £8,000 collected by Edward I. would amount to £200,000; and as the difference is supposed to be at least seven times since three centuries have elapsed, the £14,000 paid to Elizabeth would be equal to £98,000 of the present coin.

Another feature must also be borne in mind. Previous to 1866 the cost of collection was deducted from the amount received, and the net sum only stated in the Parliamentary returns. As the salaries and expenses amount to about one million, this difference must be borne in mind. Regarding the percentage of the cost of collection, if the total amounts be taken, it usually averages between three and four per cent. But, under this head, the Commissioners of Customs have some valuable remarks in their *Fourth Report*—that for 1859. They observe that the "extraneous" work of the officers ought to be valued,

and deducted from the whole expenditure, in order to get at the proper sum expended in collection. To this end they have formed an estimate for that year, which may be studied with interest, especially when considered with the remarks we have already made about the "extraneous" labour of the officials. The estimate is as follows:—

Actual cost of collection charged for 1859	...	...	£838,203
Deduct for expenses of the Warehousing			
Department	...	...	£213,995
Statistical returns	...	...	32,644
Expenses under Merchant Shipping Act			19,560
Collection of light dues	...	...	2,400
Miscellaneous (<i>i.e.</i> , Aliens Act, Copy-right, &c.)	...	...	7,620
Rent, law charges, &c.	...	...	5,000
Overtime and special attendance	...		10,289
			<hr/> 291,508
Total	...	...	<hr/>546,695

Which, on the gross revenue of £24,376,169, is £2·4s. 10d., or rather less than $2\frac{1}{4}$ per cent., instead of £3·8s. 9d., without those deductions.

The amount estimated for the warehousing work is given by the Commissioners as not being a Customs expense proper. They argue that it is in no way necessary for the collection of the revenue, and is simply a postponement of the just payment to the Crown for the benefit of the merchant. This logic may be combated by the statement that the warehousing system extends trade, and hence increases the revenue. The real difficulty, therefore, would be to strike the balance of advantage on either side. But there is little doubt as regards the position taken up in reference to the other "extraneous" duties performed; which, in itself, is a strong argument why the functions of collecting the revenue, *pur et simple*, should not be kept altogether distinct, and the work done for the Board of Trade and other public offices, be performed by the officers of the departments concerned.

It has been at times publicly stated that certain Customs'

establishments *do not pay for themselves*, and that such and such a Custom House only collects, say £1, and expends, say £500. But the fact is, the establishment in question has its *raison d'être* simply because it collects light dues, looks after wrecks, and is occupied with other varied duties connected with other departments.

REMARKS ON THE METEOROLOGY OF THE EAST COASTS OF AUSTRALIA, BETWEEN POINT STEPHENS AND CAPE HOWE, DURING THE BAD WEATHER MONTHS, VIZ., JUNE, JULY, AUGUST.

During the above months the winds are of a cyclonic character, areas of low pressure following each other in quick succession from the westward. The gales commencing in a northerly quarter veer through west to S.W. and south, from which latter quarters it will blow hard for a time and gradually die away; and nine times out of ten during these months will again back to the northward, and another area of low pressure will succeed the previous one. The barometrical conditions preceding these gales are (as we might expect at the stations on the east coast) steep gradients, the lower readings being at the Polar stations; the steepness of gradient denoting the strength of the gale to follow. Occasionally this south wind will get easterly, and the barometer rise very high, with an appearance of rain; and when this occurs it would be well for the shipmaster to get a reasonable offing, in the event of an easterly gale setting in. But this latter case is the exception rather than the rule during these months.

These cyclonic winds bring up little or no rain with them, and this is the dry season and the pleasantest time of the year on the east coast for the inhabitants, the mornings being as cool sometimes as a spring morning in England.

But every winter we have a gale of an anti-cyclonic character occurring during one of the above-mentioned months, July being notably the worst of the three months. These gales cause great destruction to life and property on sea and shore; a constant downpour of blinding rain accompanies them, causing the rivers to

overflow their banks and the surrounding land, thus causing great havoc amongst farmers and others; while at sea light vessels are driven helplessly on shore, and deeply laden ones founder.

In July, 1866, during one of these gales the steamer *Cawarra* foundered taking the Port of Newcastle, with loss of all her passengers and crew save one man, while fourteen coasters foundered or were driven on shore; and in 1867 eight or nine more followed them.* In July, 1876, during one of these heavy easterly gales, the barques *Union*, *Monnynick*, and *Ann*, were lost, with the whole of their crews, besides several of the coasters; and again in July, 1877, the unfortunate steamer *Yarra-Yarra* foundered with all hands while endeavouring to take Newcastle harbour during one of these gales. These easterly storms, apparently of an anti-cyclonic character, are usually preceded by a spell of fine weather, during which the barometer readings are high at the various stations on the east coast, usually standing considerably over 30 inches; and the gales of July, 1876 and 1877, burst upon us with only a steepness of gradient of .2 between Newcastle and Eden, a distance of about 250 miles. The readings, as published on the weather chart of the *Sydney Morning Herald*, were as follows for four days preceding the gale, viz.:—

Received at Observatory.	Published in <i>Sydney Morning Herald</i> .	Newcastle.	Eden.
July 10th, 9 a.m.	July 11th	33.43	30.56
" 11th "	" 12th	30.38	30.50
" 12th "	" 13th	30.26	30.36
" 13th "	" 14th	30.10	30.30

Thus we see that readings had been high along the coast generally, but during the above time had been gradually falling, and that on the Saturday morning on which the gale commenced the receiver of the readings in the Observatory was aware that gradients had steepened one-tenth. During the previous twenty-four hours, between Newcastle and Eden, this in itself was a dangerous sign, and on that Saturday the ill-fated *Yarra-Yarra* proceeded to sea, and met with the full force of the S.E. gale, which burst upon her that night, and on the following morning foundered in endeavouring to

* Vide remarks by the late Commander Gowland, R.N., in Knagg's Almanack, published in Newcastle.

re-enter Newcastle, no warning signal having been received there from the Observatory. Thus we may fairly infer that the normal state of the barometer during the month is low readings, with westerly weather, and it is only when these conditions are reversed and gradients steepen in the contrary direction that we have reason to apprehend bad weather of an anti-cyclonic character coming up upon the east coast.

In Messrs. Knagg's Almanack, there are published some remarks upon the weather and the barometer by Commander Gowland, R.N., in which we find it stated that during the winter months a marked fall in the barometer is certain to be followed by a westerly wind and fine weather, no matter from what quarter and conditions the wind may be blowing under at the time it commences to fall. Now we think that the above-quoted readings show that this is not to be depended on, and is apt to mislead shipmasters, for we find that for some time preceding the July gale, 1877, there had been a steady fall of barometer which preceded one of the heaviest S.E. gales, and one of the heaviest gales it has ever been the writer's luck to encounter at sea.


In conclusion, the writer would impress upon the New South Wales Government the necessity of issuing cautionary storm warnings whenever this anti-cyclonic condition of the atmosphere shows itself during these months; for had such caution been issued by telegram from the Observatory to Newcastle on that Saturday morning, July 14th, the *Yarra-Yarra* would probably have remained in port, and the lives of her crew been spared.

The storm signals issued at present on this coast are not forecasts, but are sent out upon it being known in Sydney that a south gale has begun to blow at the southern stations: and as this gale is usually the Polar wind of an area of low pressure passing over, it will generally take off after a few hours hard blowing; whereas these anti-cyclonic storms generally burst upon the coast, commencing at some point of the eastern semi-circle of the compass, giving no warning sometimes except the barometrical conditions which the writer has endeavoured to point out.

MARSHALL SMITH, Master Extra.

Port Adelaide, South Australia, Dec. 17th, 1877.

THE LIVERPOOL SEAMEN'S DISPENSARY.

E are pleased to be able to announce that the Seamen's Dispensary, which was opened by the Committee of the Liverpool Sailors' Home, about twelve months since, and to which reference was made in our April and July numbers of last year, bids fair to prove a success. We may remind our readers that the object of the dispensary is to provide seamen with proper advice and medicine in cases of certain special diseases; and bearing in mind the suffering endured by men who go to sea while affected by such diseases, and to the serious inconvenience produced on board ship by the disablement of hands from this particular cause, it is clear that any steps which may be taken to attack the evil at its source are deserving of cordial support. Apart from these considerations, however, the promoters of the Seamen's Dispensary have a further object in view.

Like all large towns, Liverpool is cursed with a swarm of advertising quacks and impostors, whose ignorance of the cases they profess to treat is equalled only by the extortions they practise on their unfortunate patients. The Sailors' Home Committee hope to spring a mine under these gentry—at least, so far as seamen are concerned—by placing the advice of properly qualified practitioners at the service of every man who is prepared to pay a fee of one shilling. The dispensary should now be well known among seamen at Liverpool, the Mersey Docks and Harbour Board having permitted its notices to be posted inside the dock walls. Therefore, if seamen allow themselves to be imposed on in Liverpool in future, it is quite clear that they will have only themselves to blame.

If dispensaries, like that at Liverpool, could be instituted at all the large ports in the country, they would prove a great boon to the Mercantile Marine. Every day seamen are being shipped while suffering from disease that will quickly render them either totally or partially unfit for duty, and if anything could be done to remedy such an unsatisfactory state of affairs a great benefit

would be conferred on all concerned. The law, which has attempted to place a remedy in the hands of shipowners, by providing for the medical inspection of seamen prior to engagement, has failed to remove any of the evils to which we now refer. In fact, it has become almost a dead letter.

It has been suggested that a compulsory system of examination should be instituted, but this proposition may be dismissed as totally impracticable. In the first place, the opposition to any such scheme, *per se*, would undoubtedly be very great; in the second, it would be impossible to lay down any hard and fast line as to when a man should be deemed unfit to proceed to sea; and, in the third, there are many large vessels which carry surgeons, and on board which men could be treated as well as on shore. Until the operation of the Contagious Diseases Acts has been extended to all large ports, we fear the only remedy to be found for the present state of affairs, must lie in the voluntary efforts of shipowners, and institutions like the Liverpool Seamen's Dispensary.

CORRESPONDENCE.

BRIDGE STEERING GEAR.

To the Editor of the "Nautical Magazine."

SIR,—In writing the article on this subject, which appeared in your October number, I was influenced by no other consideration than the importance of the question to safe and easy navigation, and to the interests of life and property.

If the question had no bearing on these important particulars, I would not have given myself the trouble of writing it, or taken up your readers' time in its perusal. Believing, however, as I do, that the question bears strongly on these interests, and that there is great room for improvement in the present method for steering from the bridge, I sent you the article with the view of ventilating the question.

Up to the present your November and December numbers have

not reached me, but your January number, by a mere chance, has come to hand. In it I find an article, signed "W." on "Steering Gear," and a letter from Mr. William Denton on the above subject.

Your correspondent considers the method I have suggested as impracticable, on the ground that the general arrangements of a steamer amidships would interfere with a straight line from the horizontal circle on the rudder stock to the gipsy wheel under the bridge. He seems to have lost sight of the fact that it is not absolutely necessary that the straight line shown in the diagram which accompanied my article should be adhered to. The forward blocks of the tackles in the engine-room may be attached anywhere to the side of the engine-room, and some engine-rooms under the upper deck, where I have proposed attaching the tackles of the steering gear connections, have a considerable breadth, quite sufficient, if necessary, for the rods to run from the horizontal circle on the rudder, on a parallel line with the deck; this would throw the hauling part of the tackles, passing over the gipsy wheel, clear of the funnel, or other obstructions, and, if necessary, fair leads may be applied without any loss of power to secure it.

If, again, the placing of the tackles in the engine-room is objected to, what objection is there to arrange them to work over the boilers, where there is generally spare space, and where they can be attended to, though not perhaps so conveniently as if fixed in the engine-room? This arrangement would give the hauling part of the tackles a greater angle to avoid all midship obstructions, without in any way interfering with the direct action with the rudder. These considerations, in my opinion, dispose of your correspondent's principal objection.

He states, in his second paragraph, that "it is absolutely necessary to have all chains and rods connected with the steering of the vessel—machinery which frequently gets out of order—in such a position that immediate access may be had to any part, and, in cargo steamers, this can only be done by fitting the steering rods and chains above deck." By limiting his observations to cargo steamers he seems to make the concession that, for other steamers, the direct acting steering gear, which I have suggested, under the

deck, is applicable. If so, my answer is, then let it be applied wherever it is applicable. There is no reason because some steamers' steering gear connections cannot be led in any other way than through the "tortuous" route of six right angles, that, therefore, those steamers whose arrangements admit of direct action should have theirs also on this laborious and dangerous principle. My answer to his argument for fitting the gear above deck on account of its so frequently getting out of order, is, fit it below the deck, where the weather cannot so frequently put it out of order, do away with your right angled nips, apply direct action, and then *truly* you "reduce the friction to a minimum."

The frequent breaking of the gear on deck is principally due to right angled nips, and to the fact of its being there.

Surely your correspondent does not mean to intimate that there is any great difficulty in running rods that will hold the rudder, in all weathers, without risk of breaking through cargo space. Running, as they would, on rollers unexposed to the weather, they would require oiling only once after every passage, and of this only a fractional amount. Unlike the rods fitted on deck to the curve of the ship's side, causing much friction, and, more or less, a bending strain at the rollers, these would be subject to a direct strain only, and, consequently, the wear of the rods, in the way of the rollers, would be reduced to a minimum, and, as one or two inches movement at most is all that would take place with the rods in ordinary steering, if they were at first properly adapted to their work, they would in all probability wear the ship out. A simple rule applied to the rods passing through cargo space, would remove this bugbear of rods breaking in that space, viz., fix on the strength of the chains necessary to work and control the circle on the rudder stock, after which give the rods passing through the cargo space sufficient additional strength, to insure, *if there is to be any breaking*, that the chains shall be the first to break.

I notice next what Mr. Denton says respecting "the huge quadrant, with its appendages, being close to the passengers' berths, and causing great annoyance to them during the night." He evidently here has the picture before him of chains rattling, rudder kicking, and rods dancing in a very frantic manner; many

others, besides your correspondent, have drawn the same graphic picture. When steering with the simple tiller, without any quadrant, there was much truth in it, as the gear then could only be adjusted in tightness to the tiller when on the centre, as I have before shown; but when the tiller was hove half or hard over, with the ship bowing a gale, the gear would be very much slackened, consequently all the row and racket.

But your correspondent can surely see that steering with the circle will hold the rudder as firm when hard over as when it is in the centre, consequently this picture, applied to the gear I have suggested, is altogether out of place. There would be no row or racket, except some little, in very extreme cases, and the row then would be mostly from the rudder playing in the gudgeons.

Referring to your correspondent's difficulties about boxing up the gear below deck, my reply is, have the boxing fitted to open.

In his fifth paragraph he objects to my "analogy of the rope yarn and nail," and says "that the friction caused by the four nips can, by the application of large well fitted rollers, be reduced to a minimum." This I must say is not correct, either in theory or experience. Besides, I object to your correspondent dealing with imaginary rollers, which he does not define. My reasoning on this subject is based on the class of rollers generally fitted by the builders; but it does not matter so very much what class of rollers is applied, for, when the steering connection forms three right angles (your correspondent has four), much of the force of the helmsman for heaving over is lost. A simple experiment will serve to show this: place a cask of water on one end, on the midship line of a ship with a level deck, which keep wet to make the cask slide easily, attach a rope to it, and make a man sit down on the deck, cask and man forming a right angle with the ship's length, allow the man no support to his feet, let him draw at the cask until he draws himself towards it, bale water out of the cask until the weight of water left just admits of the man moving the cask towards him, the cask will then fairly represent the amount of force the man can exert, in pulling against his mere weight alone. Now, replace the cask and treat it as the end of a ship's tiller, take six blocks that will fairly represent any class of rollers that are likely

ever to be applied to bridge steering gear, and place three on each side of the ship, in like manner as the steering gear blocks are placed, Nos. 1 and 2 nips need not be so far apart; now reeve a rope through each side and make fast to the cask. If done properly this will be a fair representation of bridge steering gear connections, with three right angles on each side. Now let the same man again sit on the deck, without any support to his feet, and taking hold of one rope, at the fore part, let him try to move the cask, pulling simply against his own weight, as before; of course he cannot do it. Now bale out a quart of water each pull, until the man can move the cask, compare the weight of water baled out with the weight of cask and water remaining. My own experiments have shown this to be over one-half, but, in these experiments, I used only the gear on one side, the weight of drawing back the other rope through three right angles was therefore absent. It is from such like experiments that I draw the conclusion,—notwithstanding what your correspondent states about rollers reducing the friction to a minimum,—that any other class of rollers than those that are now generally applied would not reduce the loss of power of the helmsman to any appreciable extent.

Your correspondent thinks I am wrong in condemning so sweepingly the present method of fitting amidship steering gear, I therefore ask your indulgence while I give one more experiment in reply. I shall take it for granted that he has had some experience, or at least knows something of boat-sailing. Let us take an ordinary ship's gig, and fix a tiller on the after part of the rudder, the tiller to be half the length of her steering-yoke, in her we can apply those rollers your correspondent states will reduce the friction to a minimum; two small spars made fast on each quarter will enable us to fix the first two nips or blocks, we will attach the second two about the middle of the boat, as low as convenient on the sides, the other two we will attach to the bottom of the boat, right under the sitter's hands, at the middle of the midship thwart, after reeving the lines through, and attaching them to the tiller, it will then fairly represent bridge steering gear connections.

If your correspondent will allow me the liberty, without offence, I will suppose him to be the sitter, and steering the boat with a

tiller rope in each hand, leading from No. 3 nips, under where he is sitting; after having made sail on the boat, with a side wind, and pressed her through the water for some length of time, I should like very much to ask him how he liked steering on that principle, how he enjoyed his trip, and what he thought of the "novel contrivance" for steering, and how it compared with the comparatively easy and more direct acting steering yoke. I cannot but think that he would be as sweeping in his remarks on such a contrivance to steer a boat even on a mere pleasure trip, and more especially if it was his daily occupation, and he had no power to alter it, as I have been in my remarks on the same contrivance applied to boats of a larger size, but where there are very much larger interests at stake. I am, therefore, still of the opinion that I have not been more "sweeping" than the importance of the subject demands. At the same time, I am gratified in learning your correspondent's objections.

The writer of the article on "steering gear" indulges in a light and fanciful vein, I presume, therefore, he will allow me in my reply to indulge in a little of the same. He reminds me of the restless naval captain who could never catch an enemy on whom he could test the fighting powers of his ship and the perfection of his drill. Tired out with waiting and waiting, the feeling ultimately became too much for him, and broke loose, and he consequently commenced firing away all his great guns at nothing.

The writer, in his article, fires off a number of guns, all, indeed, very harmless, as one of his principal ones had no higher aim than to attempt to "spoil my breakfast." Replying to my question on the desirability of being able to heave the rudder over 90 degrees, he somewhat triumphantly states "that the scientific and practical men of every age and nation have hitherto believed 45 degrees to be the most effective for all purposes, and that 42 degrees was the amount in the Royal Navy."

Having fired off this great gun, without even staking a fraction of an opinion on the question, he coolly retires beyond range, and makes himself merry with a picture, which his imagination depicts, of my reducing the size of the rudders one-half, and the helmsman spinning the wheel round and round twenty-eight times each way.

The target which my question supplies him to shoot at is placed very much higher than he aims. I recommend him to aim higher, as the question is well worthy of his highest consideration. I shall define it more particularly. It is this : Is the power of a rudder for revolving a steamer on her axis limited to 45 degrees, and if 90 degrees were applied would she describe a smaller circle in a given time, and would it be more conducive to safe navigation and all its attending interests ? Does the writer think he can batter this target down with a mere statement of what he believes to be other men's beliefs ? If the subject is worth writing upon, it is worth an answer, and, if the answer is a negative, better reasons than mere beliefs ought to be advanced. This is due to the reader and to the importance of the question. Even if the writer's statement were true, does he mean to insinuate that, therefore, we ought to allow our inquiries, to insure safe navigation, to become fossilized. There is plenty of room for new thoughts and inquiry in this extensive field, as the number of collisions and losses fully proves. Mere beliefs weighed in the scale of evidence do not amount to very much, but I will give you one here for what it is worth. In the first place, I must express my unbelief in the writer's statement ; and, in the next place, my belief that the limiting of the heaving of the tiller over to 45 degrees grew naturally out of the fact that the gear hitherto applied would not heave it any further, and not from the fact that scientific and practical men considered that 45 degrees was the most effective.

How, let me ask, comes it to pass, if the latter is true, there are so many transgressions, by intelligent men, of this rule. Wherever the rudder can be thrown over 90 degrees, and the occasion requires it, it is done, and I doubt much if the writer does not do it also. Has he ever been steering a boat that will admit of 90 degrees, running at right angles alongside a ship, turning some sharp corner, or narrowly avoiding colliding with some other boat, and limited himself to 45 degrees only of rudder ? This, I think, to say the least, is very doubtful. I have never yet seen, in any part of the world, any boat, yacht, craft, junk, or vessel of any description, which could use 90 degrees power of rudder, that did not use it, and with great effect.

These are the vessels of which it is proverbial that they turn in their own length, while the minimum time in which a steamer of 350 feet long, going at eight miles an hour, uninfluenced by weather, will perform a revolution, with the rudder at 45 degrees, is fifteen minutes.

It has for many years been my habit, for compass purposes, in every new steamer, in every five degrees change of dip in the magnetic needle, to revolve the ship (weather favourable) hard round on the port helm, and likewise on the starboard; carrying out my own method of obtaining all changes of deviation. This method appeared some time ago in this Magazine. Besides this, it has been my habit to take advantage of not being able to reach a port before night, which I could not enter afterwards, to revolve my ship again and again, experimenting with compass adjustments, and trying to produce perfect compensation, at least for one locality. The time of these revolutions had always to be noted, and, as I have said before, fifteen minutes, after the helm was hard over, and the ship had got up her full revolving speed, was the minimum time of a complete revolution. Surely there is plenty of room here, especially where there are such large interests at stake, for improvement.

I am, Sir, your obedient servant,

JOHN MILLER.

SHIPS' DOCTORS.

To the Editor of the "Nautical Magazine."

SIR,—Some weeks ago one of your contemporaries introduced to public notice a few grievances and hardships alleged to be existent in the daily lives of a certain section of professional men. These were made prominent in an article termed "Doing the Doctors." The class therein alluded to, were the surgeons and physicians practising in London, principally as consulting men. Those comprising it are a useful enough body of men, fully alive to the good things of this world, and their own importance, and uncommonly well able to take care of themselves, independently of any efforts of the press in their behalf. With a few exceptions, I am not

aware that the profession regards them as a concentration of all its wisdom, at the same time that it freely concedes to them a thorough knowledge of the advantages to be gained by a good tide taken at the flood.

There is another class of men, Sir, in whom you and your readers, however, should take some interest, that of "Ships' Doctors." If you will permit your pages to be used for the purpose, a word on the subject might be of some good. Formerly, a man who sought employment as a ships' surgeon, was considered to be at a very low ebb. With some show of reason he was commonly looked upon as an "outcast," a "ne'er do well," and a "waster," a "compound of all kinds of iniquity," a "gin-bibber," and a "sinner." Happily at this date, such a verdict, were it given, would not be endorsed by the public.

Society has become afflicted with a "*cacoëthes*" for travelling, for seeing the world as it is called; it scarcely matters if the process is conducted with its eyes shut. To fill its pockets with coupons, and rush to and fro upon the earth, is the thing to do. Amongst other classes, the medical has caught the infection, with this advantage over others, however, that, in its progress hither and thither the application of its skill can be made a "means to an end." The lists for medical appointments, in the shipowners' offices, are overflowing. The names of applying doctors are an overgrowth; they have become a nuisance; the supply is greater than the demand. The former being in excess, it is more the fault of the employer than the employed under the circumstances, if the ships' surgeon is of inferior quality, incompetent, and undesirable. There is a large stock for selection, and the material to choose from is of all values. Now the men, for the most part fresh from the schools, although open to the charge of youth and inexperience, are at the present time avowedly in a position justly to claim the respect due to intelligence, industry, and respectability. The consequence is, that the public, and the services to which they become attached are the gainers, not so the men as a class. So long as the supply is so large, so long will the remuneration given be as low as possible; that is business.

Considering the services rendered, and the attainments possessed,

the pay of the Mercantile Marine medical officer is inadequate. Life afloat, from a doctor's point of view, has attractions, and many would gladly stay in it, were it not for the inevitable *but*. It is all very well for a voyage or two; *but* the pay is bad, and we can't afford to stay. It is a road to "nae spot" in fact. A house surgeon on shore receives no higher salary, but his position leads him to something in time; a connection in the place may be formed, and an opportunity of winning the public confidence during his term of office, without anxiety and weariness perpetually overshadowing him, presents itself. The advantages placed before the nautical doctor are very limited. If he be studious he has time at his disposal; if observant he has abundant opportunities of acquiring an invaluable knowledge of the world and men, and there it ends. Material advantages he has none. He cannot save money, and he is very liable to the great disadvantage of becoming indolent, and very soon losing his inclination for facing the thralldom and daily routine of average professional life in town or country.

I think, Sir, that the class alluded to should be allowed to practice their calling, that is, quite outside the pay for which they sign articles; they should be permitted to charge for their attendance upon the cabin and saloon passengers of ships and steamers.

The advertisements of the passenger lines, in connection with the passage-money, run somewhat thus:—"An experienced surgeon will accompany the ship," with him is included the stewardess, and occasionally that useful animal the cow. The intending traveller thus understands that his money payment includes the attentions, if required, of the company's servant, "the ship's doctor," gratis. This is not fair treatment to the members of a so styled "learned profession." To acquire the title is not the easiest work in the world, and the road to travel, after its acquisition is not hedged with roses exactly; mentally as well as physically, the doctor is very often overtaxed wherever he is, and it is not just, that for a mere pittance in the way of salary, and what a labourer calls his "grub," he is expected to dance attendance for nothing upon bagmen crossing to New York, or

families of settlers journeying to the Antipodes. "But, your unprotected doctor," says the shipowner, "is alive to all the *pros* and *cons* of the matter." Exactly, and because he is so, he merely makes a convenience of your service; he takes no interest in it; simply he makes you a stepping-stone to something else, and uses you for a purpose. It is to prevent this, that I venture to suggest the remedy of charging fees on the part of the medical man, and the alteration of the shipowners' advertisements, as far as this matter is concerned. The latter should not expect their surgeons to give of their best, to draw upon their stock-in-trade for the benefit of their cabin fares, and indirectly for the benefit of their pockets without proper remuneration, without the possibility of becoming blessed with shootings, carriages, and yachts. These doctors they might remember, although to an extent their servants, are the possessors of educational privileges certainly equal to their own, and in some cases are ahead of them in mental wealth and acquirements. Travellers are expected to pay when they are staying in places of stationary accommodation; equally ought they so to do in places of accommodation that move about.

One thing is certain, that by this plan of charging, the travelling public would in no way suffer; the shipowner would not lose; rather, instead of constantly changing his medical officers, he would retain them, and get from them good and interested service.

At the same time, in terms of their agreement with them, the surgeons would attend the ships' companies, and such of the travellers as come under the heading of steerage passengers, emigrant, or otherwise.

I am, Sir,

Your obedient Servant,

N. B.

BOARD OF TRADE INQUIRIES: THEIR CONSTITUTION AND
MODE OF PROCEDURE.

To the Editor of the "Nautical Magazine."

SIR,—As there is a very widespread feeling amongst all classes of the shipping community, and more especially amongst shipmasters,

that the Board of Trade inquiries are unsatisfactory and severe, I hope you will grant me space in your valuable work for a few remarks on the subject. I refer more particularly to the recent case of the s.s. *Danae*, held on the 28th and 29th January last, before Mr. Rothery, the Wreck Commissioner, at his Court in Westminster, of whose observations when giving judgment the *Times*' report is as follows :—

“The learned Commissioner, before giving judgment, observed that this was one of the most important cases, for its bearing on the construction, &c., of steamers carrying grain cargoes, that had ever come before the Court. He reviewed the circumstances of the voyage and of the casualty, mentioning that the vessel had a slight list to port on starting, and that this increased in the gale till the ship became unmanageable. One-fifth of her tonnage-space was above her deck—a construction which would not conduce to her stability. Her net tonnage being 745 tons, she carried, as the master said, a cargo amounting to 1,490 tons ; but, as the assessors found, of either 1,610 tons or 1,541 2-3 tons. At the lowest computation she was overladen and ill-adapted to face the dangers of a winter voyage in the North Sea. It was said that her Plimsoll disc was never under water, but that disc was placed by the owners on their own responsibility and not sanctioned by any authorities. She had, in fact, only between 2 feet and 3 feet free-board, perhaps but a little over 2 feet, when, according to the rule of 2 inches for every foot of hold, she ought to have had 40 inches, or 3 feet 4 inches. It was said that she had made voyages before as deeply laden. It did, in fact, appear that she was as deeply laden on her last voyage, and on that voyage she encountered a gale, and was so damaged that it was only by an accident that they did not have to hold the inquiry then instead of now. Passing from the overloading to the shifting of the cargo, the Commissioner said that the Court found the cargo did shift. Lloyd's rules for stowing grain cargo at Montreal laid down that vessels of more than 400 tons carrying grain must carry, at least, one-third of it in bags ; Lloyd's rules at New York laid down that vessels of more than 500 tons, carrying grain, must carry half of it in bags. This vessel, of 745 tons, carried all in bulk. The Court found that the loss was due

(1) to defective construction ; (2) to the fact that the ship was overladen ; (3) to the fact that the shifting-boards were insufficient ; and (4) the fact that the sluices between the engine-room and the main hold were left open. For the acts and omissions in this case the Court considered the owners and the master almost equally to blame, and the Legislature had said that they should be equally responsible. So far as the owner was concerned, the Court had no authority over him ; but it could and it would punish the master for making himself an instrument in the hands of the owner to expose lives and property intrusted to his charge. This master was aware from the previous voyage that to load the vessel to 17 feet forward and 19 feet aft, as she was loaded, was dangerous. It might seem harsh that the Court should punish a man for offences no greater than those committed by the owners, but it was the only way which the Court had to prevent such reckless conduct. If masters learnt that for overloading their vessels, even though they did not load them down below the Plimsoll mark, they would be punished, owners would find it difficult to find masters to take charge of vessels so laden. The master's certificate would be suspended for six months, but the grant of a mate's certificate to him would be recommended."

Mr. Rothery first remarks that the case is a "most important" one. Therefore, the Court ought to have been composed of the *best* men available for the purpose ; in other words, the Judge and Assessors who were most competent to deal with the case. To the Wreck Commissioner himself as the Judge I make no objection, but, on the contrary, I think a more competent one could not be found ; but I have been unable to ascertain in what service or trade the Nautical Assessors gained experience.

Now, Sir, do you not think that it should be publicly announced how a man became competent to act as Assessor, or, in other words, the adviser of the Judge, in a case concerning the loading and stowage of a grain cargo in bulk in a cargo steamer ? Has he learnt it from books ? If he has, does this give him practical experience ?

The captain at sea, when any danger arises, has to decide instantly what to do ; he often has not even a few seconds to

consider whether this or that would be the better course to take, and knows nothing of what will be the results of any course of action at all. It is very easy after an accident has happened, and the results and following circumstances are all known, to say what "might have" avoided that accident; but is it ever considered that the taking another course "might have" only altered the following circumstances a little, and, by creating other difficulties and dangers, perhaps brought about an accident?

In regard to the constitution of a Court of Inquiry, I think (and I do not doubt that many more shipmasters do so also) that it is very good in principle, but not in practice. That the judge should be a barrister, I am of opinion, would be not only perfectly right, but very necessary, and that he should be assisted by two Nautical Assessors would also be very necessary.

In the Navy all offences, faults, or errors of judgment, are tried by a Court composed entirely of their own compeers—sometimes, I fear, to the disadvantage, and other times too much to the advantage, of the accused. Why should not merchant captains also have the advantage of having the Court partly composed of their own compeers, especially as these would not be in a position to show favour or otherwise, as they would be held in check by the judge being a barrister.

Then, again, if the Court were composed as I have stated above, could not counsel, and even solicitors, be dispensed with? For if the Assessors were to examine or cross-examine the witnesses, they, by their technical knowledge, could bring out clear evidence, instead of, as is at present the case, the witnesses being puzzled and bewildered by a number of questions put, with a great deal of bullying, in a totally incomprehensible form, by a man who neither knows nor understands what he is talking about, but has simply the object in view of convicting the man he intends to accuse at a later stage of the proceedings.

The next thing I wish to point out is the injustice done to the accused by being tried before the same Court and at the same time as the inquiry is held. This injustice arises principally from his being convicted on his own evidence. The two parts of the case are really quite separate, and the present system of mixing

them up together is manifestly unjust towards the accused, because the Board of Trade counsel or solicitor (having, as I said before, the sole object of conviction) gives his whole attention to the evidence required for the latter stage, and to the obtaining the evidence he wishes from the mouth of the very man he intends to accuse, thereby securing the conviction he might otherwise find it difficult to accomplish. Hence the inquiry, as at present conducted, dwindles down into the mere ascertaining what course of action would have avoided the particular accident inquired into, and the punishing the accused for not taking the course suggested by the Court, instead of the one he did take.

The second thing Mr. Rothery mentions is, that "one-fifth of the *s.s. Danae's* tonnage space was above her tonnage deck, a construction which would not conduce to her stability." The latter part of this statement is all I have to do with, and I think that in it the learned Commissioner is mistaken; because only a small part of this space would be used for cargo, the rest being all buoyant space composed of cabins, empty cargo space (by the evidence part of the cargo space was empty), deck bunkers (also empty), empty space over engines, and the unlucky berths which were washed away and ultimately caused the foundering of the vessel. The discussion of buoyancy, however, I leave to an abler pen, only remarking that when the vessel was listed over, any part of this empty space coming to be below the water-line must much increase the vessel's floating powers, and, being on the lee side, necessarily conduce much towards preventing her going further over.

The third point referred to is the overloading, on which Mr. Rothery remarked:—"According to the rule of 2 inches for every foot depth of hold." Now, Sir, this rule, I rather think, is no rule at all, but is, instead, only the opinion of some person or persons unknown. I may be mistaken, but I certainly think that, during the discussion in Parliament concerning a load-line for the Act of 1876, these long-poop ships were generally allowed (on account of the extra buoyancy in this space) to be safe with about $1\frac{1}{2}$ inch to the foot depth of hold, which would give the *Danas* less free-board than she really had.

The fourth thing he mentions is, the shifting of the cargo.

Now, I maintain that in a properly-trimmed ship the cargo cannot shift so much as to cause the vessel to founder, unless some bulk-head gives way and so lets loose the cargo into space intended to be empty, and leaving vacant space intended to be full, and which was before full. Then, as to the depth of shifting-boards necessary, my experience (which has been far from inconsiderable) has convinced me that, not only in this vessel, but in a vessel of much greater depth, in fact, in any vessel, four feet of shifting-boards below the deck beams (beam fittings to be, of course, put in in addition) of each deck would be amply sufficient. My opinion, as here stated, may be, and I rather think is, considerably different to the "popular" ideas on the subject, but is formed on the following grounds—always supposing the vessel to have been *properly and carefully* trimmed when loading. When this last is the case, the cargo will not settle more than six inches. Take this, then, to be represented by a parallelogram, of which the top of the grain and the deck above are the two sides, and the sides of the vessel the two ends; the shifting-boards divide this into two separate parallelograms without communication. Now, while the vessel remains upright, the cargo will not shift; but if she is by some means listed over so as to fill up one-half of each of these parallelograms from the grain underneath its own opposite half (and to effect this the vessel would require to be listed over a very great deal), the grain will be one foot from the deck on the lee side of the shifting-boards. Next, in regard to the grain working through underneath the shifting-boards: let any gentleman go on board a vessel loading grain in bulk, have it levelled $1\frac{1}{2}$ feet above the lower edge of the shifting-boards, on each side of them; then let him endeavour, by treading it down on one side, to force it up on the other side, he will find that, tread as much and as hard as he likes, he cannot make a difference on that other side, thereby showing the sufficiency of $1\frac{1}{2}$ feet shifting-boards, to prevent the grain working through underneath them, this making now $2\frac{1}{2}$ feet shifting boards. However, there is also the effect of the vessel lurching to leeward, for this I allow $1\frac{1}{2}$ feet more of shifting-boards, making a total of 4 feet, and as this is reckoned from the deck, there is still the depth of

the deck beams below what is absolutely necessary. Then as to the lower part of the cargo shifting, this is an utter impossibility, as there is no place for it to shift to, except to the weather half of the lee parallelogram mentioned above, but this half increased to the space of a whole parallelogram by the grain having filled up the lee half from underneath the weather one, and as this space would be just on the lee side of the shifting-boards, the lower part of the cargo, so shifting, would have to raise a depth of more than three feet of grain almost perpendicularly, in order to fill up the only space not already full. Can this be thought possible? And, has any one ever found this happen? I certainly have not. I remember that in Court the learned Commissioner referred to "Stevens on Stowage" as mentioning 6 feet for the depth of shifting-boards. Now, Sir, does it not stand to reason that an author, in writing a work intended for the guidance of men inexperienced in a certain trade (in this case the grain trade) would rather write the outside maximum of safety than the minimum necessary? What "proof" then is this work that the *Danae* was unsafe with from 4 feet 7 inches to 5 feet shifting-boards. He also quoted Lloyd's rules and the Montreal and New York laws. Now, Sir, who are Lloyd's? and who made out the minimum allowed by their rules to be the point of difference between safe and unsafe? Lloyd's, as I understand, are a body of underwriters, who, having freedom of contract, can say we will not take a risk on your vessel, or cargo, as the case may be, unless you put in a certain depth of shifting-boards or carry so much in bags. But how does this prove their line to be the minimum of safety? Does it not rather point towards the maximum they can enforce without driving insurers to insure with other persons or by other means? Then in regard to the Montreal and New York laws. These laws were in force at the time the Act of 1876 was passed by our Parliament; therefore, had Parliament thought them the minimum of safety, they would have introduced them into the before-mentioned Act of 1876, and thereby not left shipowners and masters with a law to obey but without any means of knowing whether they are doing so until a Court holds an inquiry, and decides whether this law has or has not been obeyed; besides,

this decision by no means makes an owner or master safe, even if he acts upon the suggestions of the Court on any future voyage.

I have already written at length on this in the *Shipping and Mercantile Gazette*.

RALPH HOGARTH.

WIRE-ROPES AND PATENT SCREWS.

To the Editor of the "Nautical Magazine."

SIR,—In your February number, "Lanyard Rope" asks for a simple method to disengage the wire lower rigging from the screws. I attach a rough sketch of one of a ship I served in, where the shrouds were constantly "come up" to clear away the guns. By pulling out the pin from the tongue of the slip, a slight blow with a hammer causes the fillet to drop, as indicated by the dotted lines, and the shroud is free. It cannot jam, or get out of order; for, if negligence should permit the fillet pin to rust in, a cold chisel, or a marlinespike easily detaches it.



Many inventions have been patented in the vain hope of superseding the old lanyard, but up to the present time none have succeeded in equalling it for simplicity or general handiness.

When the stretch is out of wire-rope, years may elapse before setting up is required. The writer once saw an interval of five, and then the renewal of the nips was more the object than to remedy slackness of rigging.

Although cutting away masts in ships of the class where such elaborate fittings as "Lanyard" quotes is almost a thing of the past, he is wise to study every possible contingency of his profession. If it were more generally done, accidents would be fewer.

A MAN-OF-WAR'S-MAN.

BOARD OF TRADE EXAMINATIONS.

To the Editor of the "Nautical Magazine."

SIR,—Will you permit me to say a few words through the only mouthpiece our service has—your columns. Two things I wish

to draw attention to: certificated junior officer's time not counting for next examination other than as second mate, and the impediment of having to pass three separate examinations. Third officers in steamers keep a watch, are every bit as responsible as the second officer, and yet are debarred from passing their next examination because they were called third. Now, I should imagine that the object of the rule that you must have been one year second before going up for chief, was, that you should have had experience "as an officer" before filling the very responsible berth of first mate; and, as second officers in those days were about the lowest carried, the rule became as second. But now all this is altered. Companies can afford to pay four and five certificated officers; and they want them, too, in the huge floating hotels which sail the sea at the present time. Thus, an officer holds his second mate's certificate for years ere he can pass again. If I am right as to the object, then why, in Heaven's name, is this not altered? Are the hardest-worked men in this vale of tears to be utterly ignored? As to having to pass three separate times, it is an absurdity; because, if passing is a criterion at all, there is the same possibility of a man being qualified in one examination (with the stipulation that, before he can put his name to a ship's register, he shall have used the aforesaid master's certificate for one year as second mate, ditto chief) as there is in three separate ones. Then how different would things be. A man would serve his six years, say, and then stay on shore and qualify himself once and for all as a master mariner, thus avoiding the ceaseless dissipations which are always indulged in during the "I am going to pass" time. And again, he could then enter the large companies prepared to wait his turn, as it would not matter any more. There would be no more cry of "I must get my time in."

If I thought you could have afforded me space I would have been able to digress at considerable length upon these matters. But I know how valuable your columns are.—Trusting you will give me a corner,

I am, Sir, faithfully yours,

RICHARD-WAGNER PRAEGER.

London, W.

A CONSULAR COURT.

To the Editor of the "Nautical Magazine."

SIR,—I respectfully request space in your next issue for the publication of the following case heard before H.B.M. Consular Court at this port to-day, as the sentence, as well as the remarks by the Court, will, I am sure, be interesting to shipmasters.

Yesterday, one of my crew (a mess room steward), complained to me that he had been assaulted by a fireman without provocation, and, on inquiry, I found that such was the fact. I therefore made an entry of the offence in the Official Log, and furnished the offender with a copy as required by law. Some four hours afterwards, the same complainant came to me and stated that, for having reported the first offence, he was again assaulted by same fireman; evidence of which was clear by the blood then on complainant's lips.

Now, being in a port at which there is a British Consular Court, I considered it my duty (for the purpose of enforcing discipline on a man who evidently disregarded the Official Log and its penalties) to have him brought before said Court, and advised prosecutor to procure a summons to that effect, which he accordingly did.

The case having been heard, and proved by a witness, complainant was asked if he returned the blows, to which he replied in the negative.

The presiding judge remarked that complainant then showed no marks of the assaults; that the case should not have been brought before the Court; and that when he (the judge) was the age of the complainant he would "give and take."

The Court then sentenced prisoner to pay a fine of one shilling, and complainant to pay cost of summons, viz., seven shillings.

I make no comment on either the sentence or remarks by the Court, but would in future be disposed to have disputes at Constantinople "settled out of Court."

The accuracy of the foregoing, as related, can be vouched for by my chief officer and three other witnesses present in Court.

I am, Sir, most respectfully yours,

THOMAS JENKINS,

Constantinople, March 1, 1878.

Master, *Sesostris*.

RATING OF SEAMEN UNDER THE MERCHANT SEAMEN BILL.

To the Editor of the "Nautical Magazine."

SIR,—I trust you will find space in the *Nautical* of this month for the following suggestion, and I trust that some members of the Select Committee on the Seamen Bill will kindly take the matter up for the good of the Mercantile Marine. No one doubts that the rating of seamen means imposition now, and ought to mean something else, both for the sake of the crews and owners as well as for statistics. The suggestion I make below has this merit, that it has no bearing whatever on wages; while it will clear up the present difficulty and put it out of the power of crimps to place the offscourings of the workhouses and gaols on board as A.B.'s. The present Act provides that the articles of agreement shall state on the face of them how many of the "seamen" are engaged to serve as "sailors," so that I have invented no new terms. All I have done is to follow the existing rules as to rating and age of second, first, and only mates and masters. Those rules do not affect wages, nor will these.

New Clause to go before Clause 6 of the Bill.—Rating of Sailors.
—When a seaman engaged to serve as a sailor in any capacity other than that of a certificated officer or a petty officer on board any foreign-going British ship is required by law to enter into an agreement in writing, his rating shall be described in the agreement under one of the following heads, that is to say—Able-Bodied Seaman, Ordinary Seaman, Apprentice, Novice, or Boy: and a sailor shall not be described in the agreement as an able-bodied seaman who has not had four years' service at sea; nor as an ordinary seaman who has not had one year's service at sea, or who has not attained the age of 16 years; nor as an apprentice unless he is duly indentured and registered; and the terms "novice" and "boy" shall include the following seamen, that is to say, a novice is one who is 16 years of age and upwards but who has had no previous service at sea, or whose service at sea is under twelve months; and a boy is one who is under 16 years of age, and is not an apprentice duly indentured and registered.

Almost all the witnesses before the Select Committee have

suggested that something should be done in the way of rating. I have shown above what that something might be, and the merit of my system is that it entails neither register-ticket nor examination. It is not necessary to impose any fine on any one for improperly describing himself as an A.B. or O.S., as the master and crew will soon find out an imposter, and take care that he is dis-rated under the present law, which is not now carried into effect as it ought to be.

Yours obediently,

SAM. HOGARTY.

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent Agents and Consulting Engineers, 6, Lord Street, Liverpool.

635. Edward Wellman Serrell, New York. "Improvements in armour, chiefly designed for ships of war."

664. Wm. Henry Surtees, Sunderland, and Wm. Haden Richardson, Glasgow. "Improvements in, and appertaining to, lamps or lanterns applicable for use on ship board and in exposed situations generally."

671. Jacob Scott Matthews, Penarth. "Improvements in apparatus for manœuvring ships."

672. John Standfield and Joseph Latimer Clark, Westminster. "Means of raising vessels or other moving bodies out of the water when in motion, so as to be enabled to increase their speed."

673. Doctor Ernst Fleischer, Dessau, Germany. "An apparatus called 'hydromotor,' for propelling and steering vessels and other floating objects by means of hydraulic reaction produced through direct action of steam with optional expansion or condensation upon water."

743. Leonard Le Guénédal, Paris. "Improved means for shipping the rudders of vessels while at sea."

747. John Louis Lay, Paris. "Improvements in and relating to torpedo boats and apparatus for guiding, controlling, and firing same."

778. Alexander Nicol, Lewisham. "Improved suspended floats, to be used for preventing the sinking or foundering of ships or other vessels."

787. Jules Decoudun, Paris. "Improved means of indicating the depths of liquids or semi-liquids in reservoirs or other receptacles, mines, and other places, ships' holds, seas, and rivers."

802. Druitt Halpin, Old Charlton. "Improvements in apparatus for recovering sunken vessels, and other purposes."

831. Wm. Glass Wrench, Glasgow, Engineer. "Improvements in screw or oblique-bladed propellers."

841. Euston Witney Duppa, London. "An improved mode of stopping shot holes and leaks in ironclad and other ships and vessels and in apparatus therefor."

858. Woodbine Cloete and Wm. Patrick Churchward, London. "Improvements in propelling vessels and in the construction of the same."

877. Edmund Walker, Leadenhall Street, London. "Improvements in apparatus connected with raising, lowering, controlling, and stopping chain cables on board ships or vessels."

895. John Frederick Schulthers, New York. "Improvements in lifeboats."

899. James Tulloch Gondie, Glasgow. "An improved bed pillow or cushion, which is also applicable for the purposes of a lifebuoy or float."

909. Ellis Cutlan, Crouch Hill, London. "Improved apparatus for cleaning the bottoms of ships."

919. Wm. Robert McAteer, Belfast. "Improvements in vessels or vehicles."

920. Thos. Byas, Glasgow. "Improvements in reefing and furling sails, and in the apparatus employed therefor."

928. George Penny, Southampton. "A new or improved skylight adapted for ships, houses, and buildings of all kinds."

930. Thomas Horsfall Watson and Samuel Joseph Woodhouse,

Leeds. "Improvements in the construction and arrangement of submarine or subaqueous gunboats, and in the guns and projectiles employed therein."

956. Albert Marcus Silber, London. "Improvements in lamps; especially applicable to railway, ship, and other exposed lamps."

976. Major Edwin Robert Wethered, Woolwich R.A. "Improvements in cleats for holding cords or ropes."

ABRIDGMENTS.

2554/77. George Quick, of Hull, Engineer, R.N. "Improvements in the manufacture of self-propelling torpedoes and rockets." This consists in loading torpedoes with rocket composition solidly by means of an hydraulic press, and then bcing so as to form a conical cavity at each end of the straight cavity left in the composition. By this means the gas issues from the rent at a uniform pressure till the propelling power is exhausted. A metal tail piece and air chamber are formed at the end. The torpedo may be caused to rotate, if desired, by forming the vent orifices in a circle with a helical twist. This materially aids in guiding it. A fine clay lining is interposed between the composition and the bursting charge. The torpedoes are discharged by electricity, through water-tight tubes, balanced by an arrangement of levers and pendulums, adjustable to any angle, and projecting through the ship's side, and arranged so that the rolling of the vessel shall not cause the deviation of the tube when the torpedo is being fired. In rockets, grooves are cut in the composition, by which means the propelling power is vastly increased.

2642. Robert Ediss Harriiss, London. "Improvements in marine safety stands." This consists in supporting cups, tumblers, glasses, &c., in gimbals fitted so as to be unaffected by the rolling of the vessel.

2780. Frederick Alsing and Harold Sachmann, Copenhagen. "Improvements in apparatus for recording a ship's course." This consists in fitting a pencil to a compass in such manner that it shall draw a continuous diagram on a strip of paper wound on a drum,

and caused to pass slowly before the pencil by clockwork, preferably the ship's chronometer, which is mounted on gimbals, so as to be unaffected by the rolling of the ship. This is, of course, a correct check on the helmsman. By using two pencils, serving to balance the card, one diagram can check the other.

2784. Emil Weyl, Paris. "Improved means for transporting merchandise." This consists in using small vessels shaped like tanks arranged so that they can—first, be coupled together like a train behind a tug; second, detached and hoisted into the holds of large ships, or third, put into railway trucks either empty or filled with cargo.

2869. Auguste Alexandre Bertrem, Liverpool. "Improvements in sail hanks." This consists in improvements on Méhu's patent of 1876, in which the hank or ring is made with a hinge, so as to be sprung over the stay or gaff, and then locked. The present invention consists in forming the ring with another hinge, so that it can pass over "bent" stays. A simple mode of locking is also shown.

2971. Caleb Bloomer, Kensington. "Improvements in the manufacture of anchors." This invention consists in forming anchors, or the various parts thereof, of cast steel, instead of forging them from iron as usual.

3391. George Washington Allen, of South Shields. "Improvements in the steering-gear of steam and sailing ships." This consists in interposing indiarubber between the shackles and links of steering-gear to prevent shocks. The rubber is preferably in the form of a ball, and held in two caged clasps secured to shackles, so that when the chain is not taut the ball can revolve, but when the strain comes on it the ball is compressed and acts as a buffer.

AMERICAN.

198082. Samuel H. Cowles, Oakville, Conn. "Propelling vessels." This consists in propelling vessels by the reaction of jets of water forced out by steam cylinders at the stern, through ports furnished with sluice-valves. To reverse the vessel these ports are closed, and the water driven through ports pointing obliquely toward the bow.

198126. John L. Lay, Buffalo, N.Y. "Electro-magnetic steering apparatus for submarine torpedo and other boats." This consists in electro-magnetic arrangements, arranged to control a rotary valve on the cylinder, the power from which works the rudder, the attraction of the armature to the magnet moving the valve. The batteries controlling and supplying the electricity are placed on shore, so that the vessel may be manœuvred without anyone being on board. Steam, air, or gas can be used to actuate the steering cylinder. A spring maintains a tension on the yoke of the rudder.

198052. William W. Shoe, Philadelphia, Pa. "Propellers." This consists in the combination with a propeller, of detachable blades, with a hub having arms, whose rear faces are inclined in respect to a vertical plane passing through the propeller shaft. The hub is usually cast, and the blades bolted to it are of wrought metal.

198053. Wm. W. Shoe, Philadelphia, Pa. "Steering propellers." The rudder post is made in two parts, adjustable to each other, for regulating the depth of immersion of the screw, which is driven by a vertical shaft carrying a bevel wheel gearing, with another wheel on the shaft of the screw. The vertical shaft is worked by belting from the engine shaft. The rudder post is so hung that the pintles are adjusted vertically.

198447. John Betts, Brooklyn, N.Y. "Fair leaders for ship's rigging." The eyes or rings embracing the shroud are connected to the shank or body by screws, and are split and made adjustable to the diameter of the shroud, and can be easily adjusted round it. Any number of eyes can be used.

199549. Edwin J. Hulbert, Middle Town, Conn. "Propellers." This consists in mounting a fixed boss or hub at the end of the shaft to which are attached arms, to which one end of the blades, which are of helicoidal form, are bolted; a second hub, but moveable on a screw thread, cut on the shaft, is placed behind the first hub, and arms are secured to it, to which the other ends of the blades are bolted. By moving this hub, the pitch of the blades is adjusted.

199874. Alfred A. Stimson, Rockport, Mass. "Anchors."

This invention consists in making the stock of an endless or elongated oval form, and arranged to swivel in the bar so that the chain cannot get twisted round it as in the ordinary anchor, as it merely slips off the rounded ends of the stock should it foul the same, and the swivelling stocks aid this.

199550. Edwin J. Hulbert, Middle Town, Conn. "Propellers." This consists in forming the blades of annular helicoidal form bolted to radial bars carried by the boss, two blades being used. The inventor hopes to get considerable power by this form.

199985. Turner F. Lerens, Cascades, Washington Territory. "Steering propellers." The screw is mounted outside the rudder on a short shaft, coupled by a universal joint to another shaft passing diagonally through the rudder, and which latter shaft is again coupled by a universal joint to the engine shaft. The screw works in a U-shaped guard, which can be raised or lowered by a chain when desired to lift the screw out of the water.

199739. Theodore Petersen, Boston, Mass. "Reefing fore-and-aft sails." Instead of the ordinary mainsail he employs two sails, one laced on the gaff (which is stationary and does not lower) and of a trapezoidal shape, and the lower one triangular and secured to the mast by rings in the ordinary way. Out and in-hauls are attached to the upper sail, so that it can be drawn in partly or altogether, when the lower sail still is set, and is practically the well-known triangular or leg-of-mutton sail. The sail is thus easily reefed, without the necessity of hands getting on the boom or gaff for the purpose, as at present done—a dangerous job, as, if the boom gibes suddenly, the men are liable to be thrown off.

FRANCE.

119560. Le Soudier, Paris. "A paddle oscillating in water or in the air at the extremity of an oscillating lever, applicable as a motor or propeller."

119562. Wilson. "Improvements in the manufacture of armour plates."

119830. Vidal & Parisol, Marseilles. "Submarine coating and paint."

GERMANY (APPLICATIONS).

6285. J. Casselli, Florence. "An apparatus for working the rudders of ships by the motive power of steam or water, and by employing magnetism for regulating the motion."

6416. Dr. E. Fleischer, Dessau. "An apparatus called 'hydromotor,' for propelling and steering vessels or other floating bodies by hydraulic reaction caused by the direct action of steam on water."

119. F. Godemar, Magdeburg. "Improvements in Buchanan's paddle-wheel for adjusting the paddles."

6460. F. E. Thode & Knoop, Berlin. "Manufacturing armour plates."

AUSTRIA.

97. H. N. Royé, E. Poret, of Paris, P. H. Baffoy, of Milly, and S. E. Dupré, of Maisse. "Applying salts of lead for preserving timber, sail cloth, packing cloth, and cordage."

112. C. Spruyt de Bay, London. "An apparatus for propelling ships, applicable also for pumps, blasts, exhausts, water and wind wheels."

120. E. P. Tardy, of Paris. "Securing armour plates of vessels and fortifications."

THE CIELIUM.—This is an astronomical model, designed by Mr. Haigh, to illustrate various parts of practical and nautical astronomy. By following the instructions that accompany the model, the position of the earth, with regard to every part of the celestial sphere at any period of the year, may be seen at a glance. This is of great advantage to the novice, for a mere parrot-like acquaintance with the names of circles and with astronomical definitions may convey no meaning to his mind—being *words*, mere *words*—but a visible demonstration of the objects and the problems with which they are connected, will scarcely fail to leave an impression not easily obliterated.

"OUR PARLIAMENTARY RECORD" is deferred until the next number.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
80	ENGLAND—West Coast—Bristol Channel—Swansea	New light on West pier.
81	IRELAND—Dublin Bay—Kish Light-vessel	Fog-signal.
82	„ S.E. Coast—Waterford—River Suir	Lighting the channels of river.
83	„ West Coast—Tralee Bay—Little Samphire Island	Alteration of light.
84	FRANCE—North Coast—River Seine	New lights in the channel of river.
85	NORTH SEA—Elbe River—Cuxhaven	Alteration in position of light-vessel.
86	„ Schleswig-Holstein—Dagebüll	Alteration of lights.
87	BALTIC—Kattegat—Liim Fiord—Egense Kloster and Hals Pier	New leading lights, and alterations.
88	„ Cadet Channel—Giedser Reefs	New light-vessel.
89	MEDITERRANEAN—Spain—Santa Pola	New harbour light.
90	INDIAN OCEAN—Gulf of Aden—Tamar Point, Berberah	New beacon.
91	BAY OF BENGAL—Martaban Gulf—Krishna Shoal	Position of light-vessel.
92	EASTERN ARCHIPELAGO—Java—Groote Kombuis, Batavia	New harbour light.
93	CHINA SEA—Raglan Shoal	Does not exist.
94	CHINA—East Coast—Yang-tze-Kiang—Kiu-toan	New light-vessel.
95	SOUTH AUSTRALIA—Murray River—Lake Alexandrina—Malcolm Point	New light.
96	PACIFIC OCEAN—S.W. Part—Onaseuse or Hunter Island	Does not exist.
97	„ „ Zephyr Reef	Position fixed.
98	SOUTH AMERICA—Magellan Strait—Sandy Point	Temporary discontinuance of lights.
99	UNITED STATES—Virginia—Dutch Gap Canal	Alteration of lights.
100	„ Nantucket Sound—Hyannis	Alteration of light.
101	CANADA—Bay of Fundy—L'Etang Harbour—Pea Island	New light.
102	„ „ St. John's—Negro Point	Temporary light on breakwater.

NAUTICAL NOTICES.

80.—ENGLAND.—*West Coast.—Bristol Channel.—Additional Harbour Light on Swansea West Pier.*—A light is now exhibited from Swansea West pier, at the distance of 430 yards from its extremity, and near the late site of the lighthouse. It is a *fixed white* light, elevated 5 feet above the upper planking of the pier, and visible only from the eastward.

81.—IRELAND.—*East Coast.—Dublin Bay.—Fog-Signal at Kish Light-vessel.*—On 1st April, 1878, the signal at present used when the mail packet is expected will be continued as a regular

fog-signal at Kish light-vessel. The gun will be fired *twice* in quick succession *every fifteen minutes* during thick and foggy weather.

82.—IRELAND.—*South East Coast.—Waterford.—Lighting the Channels in the River Suir.*—After the 1st of April, 1878, the light tower at the eastern end of the King's and Queen's channels in the river Suir will be lighted; in passing the light entering the King's channel it will show *red*, and on entering the Queen's channel it will show *green*.

83.—IRELAND.—*West Coast.—Tralee Bay.—Alterations in Little Samphire Island Light.*—On 1st April, 1878, the following alterations will be made in the light exhibited on Little Samphire island, Tralee bay:—The light (*fixed*) will show *white* to seaward, between the bearings of S. $\frac{1}{8}$ E. and E. by S. $\frac{1}{8}$ S.; and *red* from E. by S. $\frac{1}{8}$ S., over the anchorage, to the bearing of W. by N. $\frac{3}{8}$ N. The light has also been improved in power, and should be seen in clear weather from a distance of 8 miles. Variation, $24\frac{1}{4}^{\circ}$ W.

84.—FRANCE.—*North Coast.—Lights in the River Seine.*—The channel of the river Seine between Rouen and Caudebec is now indicated by 12 *fixed red* lights on the left bank, and by 15 *fixed white* lights on the right bank of the river.

85.—NORTH SEA.—*Elbe River.—Alteration in position of Light-Vessel near Cuxhaven.*—In consequence of the bank north-westward of the Ball beacon below Cuxhaven having shifted, the Elbe light-vessel, No. 4 (*Ernst*) has been moved N.W. $\frac{3}{4}$ N., $5\frac{1}{2}$ cables from her former position, and is now moored in 10 fathoms water, near mid-channel, and may be passed on either side. Position, lat. $53^{\circ} 55' 40''$ N., long. $8^{\circ} 40' 20''$ E.

Note.—The course from abreast Cuxhaven to light-vessel No. 4, is now N. $\frac{3}{4}$ W.; from light-vessel No. 4 to light-vessel No. 3 (*Jacob Henrich*), N.W. by W. Variation, $14\frac{1}{2}^{\circ}$ W.

86.—NORTH SEA.—*Schleswig-Holstein.—Alterations in Dagebüll Leading Lights.*—The following alterations have been made in the character and position of the two leading lights exhibited at Dagebüll, Schleswig:—The lights (*fixed*) show *red* to the northward, and *white* to the westward and southward, instead of *fixed white* as formerly. They are now exhibited from the landing-pier, instead of from the dike; the outer light is situated 6 yards within

the extremity of the pier; the inner light E.S.E. 87 yards from the outer light. *Variation*, $14\frac{1}{2}^{\circ}$ W.

87.—BALTIC ENTRANCE.—*Kattegat*.—*Liim Fiord*.—*Leading Lights on Egeuse Kloster Point, and alteration of Hals Pier Light*.—Two leading lights, 146 yards apart, are now exhibited on Egeuse Kloster Point, south side of entrance to Liim Fiord. The high light, shown from an iron tower, is a *fixed white* light, elevated 84 feet above the sea, and visible 9 to 10 miles. The low light, shown from a brick building, is a *fixed white* light, elevated 21 feet above the sea, and visible 9 to 10 miles. Position as given, lat. $56^{\circ} 58' 50''$ N., long. $10^{\circ} 18' 20''$ E. Also, on the exhibition of these lights, two *fixed red* lights were substituted for the fixed white light on Hals Pier.

Note.—The two fixed white lights in line, bearing N. 52° W., lead in the deepest water over Liim Fiord bar and into the fiord; this course should be followed until the two fixed red lights on Hals Pier come in line, for leading to Hals roadstead. *Variation*, 14° W.

88.—BALTIC.—*Cadet Channel*.—*Light-Vessel and Fog-Signal at Giedser Reefs*.—A light is now exhibited from a light-vessel placed near the south-east extreme of Giedser reefs, Cadet channel. It is a *fixed red* light, shown from the foremast, and elevated 31 feet above the sea. The light-vessel, painted red with white cross, with the words *Giedser Rev* on her sides, has two masts, with red globe at foremast head, and is moored in 6 fathoms water. Position as given, lat. $54^{\circ} 28'$ N., $12^{\circ} 9' 30''$ E. A white riding light is also exhibited from the forestay, 6 feet above the rail. The light-vessel, in common with other Danish light-vessels, will be kept at her station throughout the year so long as the navigation is not obstructed by ice. Also, during thick and foggy weather, a *Siren trumpet* worked by hand will give one blast every minute.

Note.—It is intended, during May, 1878, to alter the character of the light exhibited from Giedser reefs light-vessel, when it will show a *red flash every half minute*, instead of a fixed red light as at present.

89.—MEDITERRANEAN.—*Spain*.—*Harbour Light at Santa Pola*.—A harbour light has been established at Santa Pola on the S.E. coast

of Spain. It is a *fixed white* light, elevated 16 feet above the sea, and shown from an iron post on the mole in the bay of Santa Pola. Position given, lat. $38^{\circ} 11' N.$, long. $0^{\circ} 34' 48'' W.$

90.—INDIAN OCEAN.—*Gulf of Aden.*—*Beacon on Point Tamar, Berbereh.*—A cage beacon, about 15 feet high, constructed of iron, and painted black and white in horizontal bands, has been placed on the west extreme of Tamar point.

91.—BAY OF BENGAL.—*Martaban Gulf.*—*Position of Krishna Shoal Light-vessel.*—It appears, from recent reliable information, that this light-vessel is placed at least 8 miles (*not 4 miles*, as previously stated) E.N.E. from the late position of the lighthouse, in about 9 fathoms water.

Caution.—Mariners are therefore warned to be careful when rounding Krishna shoal. *Variation*, $2\frac{1}{2}^{\circ} E.$

92.—EASTERN ARCHIPELAGO.—*Java.*—*Harbour Light on Groote-Kombuis.*—*Batavia.*—A *fixed white* light is now shown on the N.N.W. point of Groote-Kombuis island, visible 9 miles.

93.—CHINA SEA.—*Non-existence of Raglan Shoal.*—Raglan shoal, reported by the British ship *Lady Raglan*, in the year 1858, to be in lat. $9^{\circ} 28' N.$, long. $109^{\circ} 25' E.$, was unsuccessfully searched for by H.M. surveying vessel *Rifleman*, 1863. In 1874 the French vessel *Jucmel* passed close to a supposed shoal in lat. $9^{\circ} 24' N.$, long. $109^{\circ} 26' E.$, and considered it identical with Raglan shoal. Recently (1877) a search has been made by the U.S. ship *Ranger*; and Commander Manley reports having made a thorough examination, under most favourable circumstances, of the locality (lat. $9^{\circ} 24' N.$, long. $109^{\circ} 26' E.$), but obtained no bottom anywhere at 100 fathoms. During this examination, occupying nearly one day, a good look-out was kept by officers both from the deck and from aloft; no indication, however, of shoal water was seen. The wind was blowing fresh from W.S.W., with a moderate sea, and a spot in the ocean sufficiently shallow to be dangerous to navigation, had it existed, must inevitably have disclosed itself. Raglan shoal has, on these grounds, been expunged from the Admiralty chart.

94.—CHINA.—*East Coast.*—*Yang-tze-Kiang.*—*Light-Vessel off Kiu-toan.*—Since the 1st of March, a light-vessel has been moored

in the middle of the channel and N.E. of the Kiu-toan lighthouse. It shows a *fixed white* light, elevated 35 feet above the sea, and visible 11 miles. During foggy weather a bell will give *three double strokes every minute*. Further particulars next month.

95.—SOUTH AUSTRALIA.—*Murray River*.—*Lake Alexandrina*.—*Light on Malcolm Point*.—This light is now established. It is a *revolving white* light, having *total eclipses every thirty seconds*, elevated 70 feet above the lake, and visible 10 miles. The light tower and keeper's dwelling are painted white. Position approximate, lat. $35^{\circ} 31' 0''$ S., long. $139^{\circ} 11' 0''$ E.

96.—PACIFIC OCEAN.—*South-western Part*.—*Non-existence of Onaseuse or Hunter Island*.—Onaseuse or Hunter Island, stated to have been discovered July 20th, 1823, by Captain Hunter in the ship *Donna Carmelila*, and placed in lat. $15^{\circ} 31'$ S., long. $176^{\circ} 11'$ E., was searched for by H.M. ships *Rosario* (November, 1870, and July, 1874) and *Blanche* (February, 1875) without being seen. From information collected by Mr. Thurston at Levuka, a resident of much local experience, and from the evidence of several masters of merchant vessels who have navigated in the vicinity, there is every reason to believe that no island exists in the assigned position. It is therefore probable that Niu-afu, or Good Hope island (in lat. $15^{\circ} 34'$ S., long. $175^{\circ} 41'$ W.) situated on nearly the same parallel of latitude as the reported Hunter island, but in west longitude, is the island originally sighted by Captain Hunter, and that an erroneous assumption of east longitude for west longitude has led to the error. Onaseuse or Hunter island has consequently been expunged from the Admiralty charts.

97.—PACIFIC OCEAN.—*South-Western Part*.—*Zephyr Reef*.—H.M.S. *Pearl*, when passing the reported locality of this reef, on the night of 4th June, 1876, struck soundings, obtaining two casts of $5\frac{1}{2}$ fathoms. The course was altered and sail shortened, but almost immediately no bottom could be obtained at 12 fathoms. The position of these soundings, deduced from observations made on the preceding and subsequent days by the *Pearl*, was in lat. $16^{\circ} 0' 20''$ S., and long. $177^{\circ} 6'$ W., or S. 59° E. (true), distant $4\frac{1}{2}$ miles from the position of Zephyr reef, as originally reported by Mr. Wilson (1875). H.M. ships *Sapphire* and *Alacrity* (June, 1876)

searched in vain for Zephyr reef in the position originally assigned to it, the latter vessel sounding in 100 fathoms without finding bottom. It is therefore probable that the $5\frac{1}{2}$ fathoms obtained in H.M.S. *Pearl* is a part of the shoal on which the *Zephyr* obtained 15 fathoms, and on which it is reported (on native authority) that a rock level with the water exists. The position given by H.M.S. *Pearl* has been adopted for Zephyr reef, viz., lat. $16^{\circ} 0' 20''$ S., long. $177^{\circ} 6' W.$

98.—SOUTH AMERICA.—*Magellan Strait.*—*Broad Reach.*—*Temporary discontinuance of Sandy Point Lights.*—In consequence of the destruction by fire, on 12th November, 1877, of the block house at Sandy point, from which the harbour lights were exhibited, those lights are at present discontinued. Due notice will be given of their re-exhibition.

99.—UNITED STATES.—*Virginia.*—*Alteration in Colour of Dutch Gap Canal Lights.*—The lights exhibited at each end of Dutch Gap Canal, James River, Virginia, are now *fixed red*, instead of fixed white as formerly.

100.—UNITED STATES.—*Nantucket Sound.*—*Alteration in Colour of Hyannis Light.*—This light is now a *fixed red* light, instead of fixed white as formerly.

101.—CANADA.—*New Brunswick.*—*Bay of Fundy.*—*L'Etang Harbour.*—*Fixed Light on Pea Island.*—A light is now exhibited from a lighthouse recently erected on the west extreme of Pea island, eastern side of entrance to L'Etang harbour. It is a *fixed green* light, elevated 51 feet above high water, and visible between the bearings of west (through north and east) and south from a distance of 10 miles. The light-tower, square, 31 feet high, and built of wood, is painted white, with keeper's dwelling attached. Position as given, lat. $45^{\circ} 2' 20'' N.$, long. $66^{\circ} 48' 40'' W.$ Variation, $18\frac{1}{4}^{\circ} W.$

102.—CANADA.—*New Brunswick.*—*Bay of Fundy.*—*St. John Harbour.*—*Temporary Light on Negro Point Breakwater.*—A light is now exhibited from a pole pending the construction of a lighthouse, at the outer end of the breakwater, extending from Negro point west side of entrance to St. John harbour. It is a *fixed red* light, elevated 40 feet above high water, and visible 8 miles. Posi-

in the middle of the channel and N.E. of the Kiu-toan lighthouse. It shows a *fixed white* light, elevated 35 feet above the sea, and visible 11 miles. During foggy weather a bell will give *three double strokes every minute*. Further particulars next month.

95.—SOUTH AUSTRALIA.—*Murray River.—Lake Alexandrina.—Light on Malcolm Point.*—This light is now established. It is a *revolving white* light, having *total eclipses every thirty seconds*, elevated 70 feet above the lake, and visible 10 miles. The light tower and keeper's dwelling are painted white. Position approximate, lat. $35^{\circ} 31' 0''$ S., long. $139^{\circ} 11' 0''$ E.

96.—PACIFIC OCEAN.—*South-western Part.—Non-existence of Onaseuse or Hunter Island.*—Onaseuse or Hunter Island, stated to have been discovered July 20th, 1823, by Captain Hunter in the ship *Donna Carmelita*, and placed in lat. $15^{\circ} 31' S.$, long. $176^{\circ} 11' E.$, was searched for by H.M. ships *Rosario* (November, 1870, and July, 1874) and *Blanche* (February, 1875) without being seen. From information collected by Mr. Thurston at Levuka, a resident of much local experience, and from the evidence of several masters of merchant vessels who have navigated in the vicinity, there is every reason to believe that no island exists in the assigned position. It is therefore probable that Niu-afu, or Good Hope island (in lat. $15^{\circ} 34' S.$, long. $175^{\circ} 41' W.$) situated on nearly the same parallel of latitude as the reported Hunter island, but in west longitude, is the island originally sighted by Captain Hunter, and that an erroneous assumption of east longitude for west longitude has led to the error. Onaseuse or Hunter island has consequently been expunged from the Admiralty charts.

97.—PACIFIC OCEAN.—*South-Western Part.—Zephyr Reef.*—H.M.S. *Pearl*, when passing the reported locality of this reef, on the night of 4th June, 1876, struck soundings, obtaining two casts of $5\frac{1}{2}$ fathoms. The course was altered and sail shortened, but almost immediately no bottom could be obtained at 12 fathoms. The position of these soundings, deduced from observations made on the preceding and subsequent days by the *Pearl*, was in lat. $16^{\circ} 0' 20'' S.$, and long. $177^{\circ} 6' W.$, or S. $59^{\circ} E.$ (true), distant $4\frac{1}{2}$ miles from the position of Zephyr reef, as originally reported by Mr. Wilson (1875). H.M. ships *Sapphire* and *Alacrity* (June, 1876)

searched in vain for Zephyr reef in the position originally assigned to it, the latter vessel sounding in 100 fathoms without finding bottom. It is therefore probable that the $5\frac{1}{2}$ fathoms obtained in H.M.S. *Pearl* is a part of the shoal on which the *Zephyr* obtained 15 fathoms, and on which it is reported (on native authority) that a rock level with the water exists. The position given by H.M.S. *Pearl* has been adopted for Zephyr reef, viz., lat. $16^{\circ} 0' 20''$ S., long. $177^{\circ} 6' W.$

98.—SOUTH AMERICA.—*Magellan Strait.*—*Broad Reach.*—*Temporary discontinuance of Sandy Point Lights.*—In consequence of the destruction by fire, on 12th November, 1877, of the block house at Sandy point, from which the harbour lights were exhibited, those lights are at present discontinued. Due notice will be given of their re-exhibition.

99.—UNITED STATES.—*Virginia.*—*Alteration in Colour of Dutch Gap Canal Lights.*—The lights exhibited at each end of Dutch Gap Canal, James River, Virginia, are now *fixed red*, instead of *fixed white* as formerly.

100.—UNITED STATES.—*Nantucket Sound.*—*Alteration in Colour of Hyannis Light.*—This light is now a *fixed red* light, instead of *fixed white* as formerly.

101.—CANADA.—*New Brunswick.*—*Bay of Fundy.*—*L'Etang Harbour.*—*Fixed Light on Pea Island.*—A light is now exhibited from a lighthouse recently erected on the west extreme of Pea island, eastern side of entrance to L'Etang harbour. It is a *fixed green* light, elevated 51 feet above high water, and visible between the bearings of west (through north and east) and south from a distance of 10 miles. The light-tower, square, 31 feet high, and built of wood, is painted white, with keeper's dwelling attached. Position as given, lat. $45^{\circ} 2' 20'' N.$, long. $66^{\circ} 48' 40'' W.$ *Variation*, $18\frac{1}{4}^{\circ} W.$

102.—CANADA.—*New Brunswick.*—*Bay of Fundy.*—*St. John Harbour.*—*Temporary Light on Negro Point Breakwater.*—A light is now exhibited from a pole pending the construction of a lighthouse, at the outer end of the breakwater, extending from Negro point west side of entrance to St. John harbour. It is a *fixed red* light, elevated 40 feet above high water, and visible 8 miles. Posi-

in the middle of the channel and N.E. of the Kiu-toan lighthouse. It shows a *fixed white* light, elevated 35 feet above the sea, and visible 11 miles. During foggy weather a bell will give *three double strokes every minute*. Further particulars next month.

95.—SOUTH AUSTRALIA.—*Murray River*.—*Lake Alexandrina*.—*Light on Malcolm Point*.—This light is now established. It is a *revolving white* light, having *total eclipses every thirty seconds*, elevated 70 feet above the lake, and visible 10 miles. The light tower and keeper's dwelling are painted white. Position approximate, lat. $35^{\circ} 31' 0''$ S., long. $139^{\circ} 11' 0''$ E.

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97.—PACIFIC OCEAN.—*South-Western Part*.—*Zephyr Reef*.—H.M.S. *Pearl*, when passing the reported locality of this reef, on the night of 4th June, 1876, struck soundings, obtained casts of $5\frac{1}{2}$ fathoms. The course was altered, but almost immediately no bottom could be obtained. The position of these soundings, determined from the preceding and subsequent soundings, was lat. $16^{\circ} 0' 20'' \text{ S.}$, and long. $177^{\circ} 0' 0'' \text{ E.}$, 10 miles from the position of Zephyr Reef as determined by Wilson (1875). H.M. ship *Porpoise* (1875) also passed the locality.

searched in vain for Zephyr reef in the position originally assigned to it, the latter vessel sounding in 100 fathoms without finding bottom. It is therefore probable that the $5\frac{1}{2}$ fathoms obtained on H.M.S. *Pearl* is a part of the shoal on which the *Zephyr* obtained 15 fathoms, and on which it is reported (on native authority) that a rock level with the water exists. The position given by H.M.S. *Pearl* has been adopted for Zephyr reef, viz., lat. $16^{\circ} 0' 20''$ S., long. $177^{\circ} 6' W.$

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101.—CANADA.—*New Brunswick.*—*Bay of Fundy.*—*Harbour.*—*Fixed Light on Pea Island.*—This light is now a fixed red light, instead of fixed white as formerly. It is situated on a dry island, eastern side of entrance to L. F. Bay, in a green light, elevated 51 feet above high water mark. The bearings of west (true) from the light is 10° miles. The light is built of wood, is painted white. Position is as follows:—

in the middle of the channel and N.E. of the Kiu-toan lighthouse. It shows a *fixed white* light, elevated 35 feet above the sea, and visible 11 miles. During foggy weather a bell will give *three double strokes every minute*. Further particulars next month.

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97.—PACIFIC OCEAN.—*South-Western Part*.—*Zephyr Reef*.—H.M.S. *Pearl*, when passing the reported locality of this reef, on the night of 4th June, 1876, struck soundings, obtaining two casts of 5½ fathoms. The course was altered and sail shortened, but almost immediately no bottom could be obtained at 12 fathoms. The position of these soundings, deduced from observations made on the preceding and subsequent days by the *Pearl*, was in lat. 16° 0' 20" S., and long. 177° 6' W., or S. 59° E. (true), distant 4½ miles from the position of Zephyr reef, as originally reported by Mr. Wilson (1875). H.M. ships *Sapphire* and *Alacrity* (June, 1876)

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102.—CANADA.—*New Brunswick*.—*Bay of Fundy*.—*St. John Harbour*.—*Temporary Light on Negro Point Breakwater*.—A light is now exhibited from a pole pending the construction of a lighthouse, at the outer end of the breakwater, extending from Negro point west side of entrance to St. John harbour. It is a *fixed red* light, elevated 40 feet above high water, and visible 8 miles. Posi-

tion as given, lat. 45° 14' 25" N., long. 66° 4' 0" W. Due notice will be given of the completion of the lighthouse and exhibition of permanent light.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, 1878.

- No. 4.—PACIFIC OCEAN, SOUTH-WESTERN PART, Notice 40, information relating to Zephyr reef, and to the non-existence of Hunter island.
- No. 5.—CHINA SEA DIRECTORY, Vol. II., Notice 15, information relating to the non-existence of Raglan shoal.
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CHARTS, &C., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, IN JANUARY AND FEBRUARY, 1878.

No.		s.	d.
843	Siam, Salang island :—Puket or Tonkah harbour ...	0	6
1946	England, west coast :—Firth of Solway ...	2	6
2713	Adriatic :—Curzola to Cattaro, with views and plans of ports Tolero, Palazzo, Slano, and Gravosa ...	2	6
1906	Vancouver island :—Becher and Pedder bays ...	1	6
788	South Pacific ocean :—Melbourne to cape Horn, western sheet ...	2	6
789	South Pacific ocean :—Melbourne to cape Horn, eastern sheet ...	2	6
1224	Africa, south coast :—Knysna harbour ...	1	6
1706	Australia, south coast :—Banks strait, with view and plans of Waterhouse anchorage and bay of Fires ...	2	0
294	Mediterranean :—Port Said ...	2	0
2717	Mediterranean :—Gibraltar to Alicante, and cape Spartel to cape Ferrat, with 15 plans ...	2	6
713	Mauritius island :—Port Louis, with views ...	1	6
766	Ellice islands :—A plan of Nukulailai island has been added.		
1423	New Zealand :—A plan of Lambton harbour has been added.		

OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1878.

(*This List is completed to the 18th of each Month.*)

212. *David Harrison*, wood; built at Liverpool in 1853; owned by Mr. R. H. Roberts of that place; tonnage, 428; Liverpool to Pongo, West Coast of Africa; salt; lost near Moorooro Island in the River Pongo, November 17, 1877. Inquiry held at Liverpool, February 14, 1878, before Raffles, Stip. Mag. Harris and Powell, N.A. Charges of careless navigation and drunkenness not substantiated. Master's certificate returned.

Strathday, s.s., iron; built at Dundee in 1877; owned by Mr. Wm. Thompson of that place; tonnage, 1,013; Quebec to Aberdeen; flour and Indian corn; lost on the south end of Langley Island, Newfoundland. Inquiry held February 14, 1878, before Smith and Cox, J.P. Ward and Holt, M.A. Charge of unskilful and negligent navigation not proved. Certificates of master and officers returned.

214. *Agnes*, and *Annie Vernon*, s.s.; the former a wooden vessel built at Milton, next Sittingbourne, in 1874; owned by Mr. Shrubsole and another; tonnage, 109; London to Antwerp; guano; the latter an iron vessel, built at Sunderland in 1836; owned by Mr. R. Pope and others; London to Sunderland; ballast. Inquiry held at Westminster, February 14, 1878, before Rothery, Wreck Commissioner. Knox and Hight, N.A. Casualty caused by master of *Agnes* not keeping a good look-out whilst at anchor. Master of the steamer also to blame for going too far to the southward when passing Yantlet Flats, instead of keeping down mid-channel. Both warned to be more careful in future.

216. *Xema*, s.s., and *Pensiero*; the former iron; built at Jarrow-on-Tyne in 1873; owned by the City of Cork Steam Packet Company; Queenstown to Bristol; passengers and cattle; the latter a brig-rigged vessel; wood; owned by a lady at Genoa; Cardiff to Constantinople; coals; collision took place about 12 miles S. $\frac{1}{2}$ E. of the Smalls light, January 8, 1878. Inquiry held February 14, 1878, before Starkie, Stip. Mag. Grant and Curling,

N.A. Casualty due to an error in judgment on the part of master and second officer, and not to wilful default. Certificates returned.

218. *Chelydra*, s.s., iron; built at Middlesbro' in 1873; owned by Mr. John McIntyre, of Newcastle; tonnage, 933; the Tyne to New Orleans; ballast; stranded on the Silver Bank, December 18, 1877; afterwards abandoned. Inquiry held at South Shields, February 4, 1878, before Yorke, Stip. Mag. Powell and Ward, N.A. Casualty due to an error of judgment on the master's part in not making allowance for current. Master's certificate returned. Chief mate in default for not seeing that proper look-out was kept. Certificate suspended for three months.

219. *El Dorado*, wood; built at St. John's, New Brunswick, 1848; owned by Mr. J. D. Woodhead, Hull; tonnage, 528; Hull to Beaufort, South Carolina; ballast; abandoned at sea, December 29, 1877. Inquiry held at Hull, February 13, 1878, before Rothery, Wreck Commissioner. Aplin and Nicolas, N.A. Abandonment and subsequent loss caused by default of master in refusing, when requested by crew, to put into port, and to his being incapable through drunkenness. Certificate cancelled.

222. *Sovereign*, wood; built at Sunderland in 1876; owned by Robert Richardson and others; tonnage, 524 and 491; Mauritius to Greenock; sugar; stranded on the South Rock Ridge, January 6, 1878. Inquiry held at Glasgow, January 11, 1878, before Walls and Scouler, J.P. Forster and Jones, N.A. Casualty caused by master navigating in a careless and negligent manner. Certificate suspended for three months.

224-227. *Arctic*, iron; built at Glasgow in 1875; owned by Mr. Hennessey and others, of Swansea; Ostend to Swansea; ballast; stranded on the Kentish Knock, January 21, 1878. Inquiry held at Swansea, January 12, 1878, before Fowler, Stip. Mag. Visconti and Hight, N.A. Accident caused by negligence of master and officer in charge. Court had no jurisdiction.

227. *Arctic*, iron; stranded about 1½ mile south of Kingsdown, January 28, 1878. Inquiry held at Swansea, February 13, 1878, before Fowler, Stip. Mag. Visconti and Hight, N.A. Casualty caused by the master altering course given by channel pilot. Certificate suspended for twelve months.

228. *Utility*, wood ; built at Talycnafn in 1858 ; owned by Mr. R. Warbrick, of Fleetwood ; tonnage, 99 ; Fleetwood to Belfast ; coals ; lost on Bernard's Wharf Bank, at the entrance of the River Wyre. Inquiry held at Kirkham, February 16, 1878, before Dunderdale and Hoyle, J.P. Wilson, N.A. Casualty caused by stress of weather and by an error of judgment on the part of the master, in not letting go a second anchor. Master not adjudged in default.

Aberavon, s.s., iron ; built at Port Glasgow, in 1877 ; owned by Mr. G. G. Mackay and others, of Grangemouth ; Middlesboro' to Grangemouth ; pig iron ; lost on the rocks off Thorntonloch, on February 5, 1878. Inquiry held at Falkirk, February 22, 1878, before Bell, Judge. Ward, N.A. Master in default for not seeing that a good look-out was kept. Certificate suspended for three months, but recommended for one as mate during that period.

Ira and *Bohemian Girl* ; the former a fishing trawl, built at Brixham ; tonnage 51 ; the latter a schooner belonging to Plymouth ; tonnage, 174 ; built at Waterford in 1848 ; owned by Messrs. Short and Marshall ; collision off the Start, January 24, 1878 ; *Ira* foundered. Inquiry held at Plymouth, February 22, 1878, before Wills and Moore, J.P. Harris and Grant, N.A. Master of *Ira* in default for not keeping a good look-out and for starboarding his helm. Charges against master of the *Bohemian Girl* not proved ; certificate returned.

Benbow, s.s., *Ostrich*, s.s. ; iron ; of 582 and 424 tons respectively ; both owned by the General Steam Navigation Company ; collision in Woolwich Reach, January 20, 1878. Inquiry held at Westminster, February 7, 1878, before Rothery, Wreck Commissioner. Visconti and Jones, N.A. Accident occasioned by misconduct of pilot and master of the *Ostrich* in starboarding the helm instead of keeping a course down mid-channel, and for not seeing a proper look-out kept ; further that the master and pilot of the *Benbow* were to blame for not having stopped and reversed when they observed that the other vessel had starboarded. The master of the *Ostrich's* certificate suspended for three months and recommended for one as mate during his suspension.

Amazon, s.s., iron ; built at Stockton, in 1865 ; owned by the Mersey Steamship Company, Limited ; tonnage, 528 ; London to Morocco ; general cargo ; lost near Azamor Point, coast of Morocco, January 1, 1878. Inquiry held at Westminster, February 28, 1878, before Rothery, Wreck Commissioner. Pickard and Beasley, N.A. Casualty due to negligent navigation of master for not using the patent log, and for not seeing that a good look-out was kept. Certificate suspended for three months, and recommended for one as mate during that period.

Pioneer, iron ; built at Howden, Northumberland, in 1866 ; owned by Messrs. Palgrave and Murphy, of Dublin ; tonnage, 663 ; Maryport to Antwerp ; pig iron ; lost on Puffin Island, on the coast of Wales, January 25, 1878 ; master, second officer, and carpenter drowned. Inquiry held at Dublin, March 1, 1878, before Donnell, Judge. Burney and Curling, N.A. Disaster caused by fore compartment becoming filled with water, and by steering gear breaking, rendering the vessel unmanageable.

Emmaus, schooner ; built at Hylton in 1866 ; owned by Alexander Swanson and others, of Wick ; tonnage, 76 ; Sandside to Thurso ; coals ; foundered at her anchors in Thurso Bay, October 15, 1877, when four lives were lost. Inquiry held at Wick, December 8, 1877, before Rutherford and Cormack, J.P. Nicolas and Jones, N.A. Court regretted that lifeboat was not got ready for service when the signals of distress were seen. No blame to any one on board *Emmaus*.

OFFICIAL INQUIRIES ABROAD.

Quiver, ketch ; sunk by collision with a steamer between Littleston Harbour and Pigeon Bay. Inquiry held at New Zealand, August 11, 1877. Master of *Quiver* to blame for not showing a light.

Queensberry, barque ; totally lost on a reef off the south-west coast of the island of Palawan. Inquiry held at Hong Kong, November 29, 1877. Casualty due to the untrustworthy character of chronometers, and also to neglect of the lead. In consequence of the privation suffered by the master, he was merely reprimanded.

Ribstone, barque ; lost on the Brill Shoal, fifty miles south of Macassar. Inquiry held at Singapore, December 7, 1877. Casualty due to an error of judgment on the part of the master, in not making due allowance for the current ; but as he made every endeavour to save the cargo, &c., his certificate was returned.

Florence Irving, s.s. ; lost on the rocks near Point Stephens. Inquiry held at Sydney, December 13, 1877. Master to blame for not using the lead when close to the land and in foggy weather. Certificate suspended for three months.

INSTRUCTIONS TO SURVEYORS.

BOARD OF TRADE, MARINE DEPARTMENT, FEBRUARY, 1878.—The following report from Mr. Wimshurst, relative to a new description of iron coming into use in the construction of iron vessels, is printed for the information and guidance of the Board of Trade surveyors.

In all cases of ships being built of this material, the surveyors will follow the course suggested by Mr. Wimshurst, and will report the circumstances fully to the Board through the principal officer of the district, in order that they may cause such further instructions to be issued in the matter as may appear to them to be necessary.

13, Downing Street, 10th January, 1878.

Sir,—The manufacture of a metal consisting of about .998 of iron and .002 of carbon has recently been so far perfected that in the past year it has been brought very prominently before the Naval Architect as a material possessing all the necessary qualifications for shipbuilding purposes. It is, therefore, desirable for me at this season of the year to notice the subject, and as shortly as possible to point out its properties and peculiarities which appear to be deserving consideration.

Two processes are used in the manufacture of this metal, one of which is the "Bessemer," its principle being to pass atmospheric air through molten iron until all the carbon has been consumed or removed, and the silicon eliminated from the iron ; this stage is determined by observation only. To the iron thus purified

a suitable percentage of carbon is added ; the product is then run into ingots, and is ready for its future stages of the hammer, &c.

The second and newer process is the "*Siemens*" or "*Landau*" process, wherein the pig iron is melted or boiled in a bath within a reverberatory or other suitable furnace, until by repeated tests of the actual metal it is found to be practically pure iron, at which time a suitable percentage of carbon is added ; the product is then run into ingots, and is ready for the future stages, &c., &c.

Supposing the rough iron to have been suitably chosen, there is but little or no difference in the finished metal, whether made by the one or the other process. The Bessemer process, however, appears to develop so intense a degree of heat that the phosphorus which may be contained in the rough iron is not removed, or at least so fully removed as is done with the Siemens process and its lesser degree of heat. Phosphorus, if present in measurable quantity, renders the finished metal brittle, and otherwise unsuitable for shipbuilding purposes.

The larger portion of the metal thus produced is so far superior to iron in its bending qualities as to be quite beyond comparison with the higher brands of iron.

Its elongation when under tension is very great. In some specimens of soft quality the elongation is fully 20 per cent. of the original length ; the ultimate breaking strain is from 26 tons to 34 tons per square inch, according to the percentage of carbon contained in the metal, the thickness of the plate, &c.

The manufacture of this metal has not reached such degree of perfection as to ensure that parcels of the metal uniform in quality can be made with certainty ; consequently each charge of the converter or bath has, when cold, to be subjected to chemical or other tests to determine its character.

In all considerations of the Naval Architect, weight is important ; consequently this superior material is well suited to his purpose, as a reduced thickness, and consequently a reduced weight, may be used to give the necessary or required strength.

The system of rivetting ordinarily followed with iron has been adopted with this metal ; but I think that, owing to the great elongation of this metal before fracture, the ordinary system of

rivetting will not be found sufficient, especially at the butts of plates, which necessarily have to carry severe strain. This question is not capable of solution by experimental tests, because such tests are little more than a simple pull up to the point of fracture. These are useful in computations of breaking strains in bridges, girders, boilers, &c., having to carry similarly simple strains, and working up to a small part of their calculated strength. The strains in ship work are very different to these; they are complex, frequently up to the limit of disturbance, and, moreover, change their direction with each wave the vessel passes through.

In reference to the subject generally, I submit that the metal, when of a suitable quality, is very superior to the best iron used in ship work, and therefore that it may properly be accepted by the surveyors in that order of value; but as many iron steam vessels have so small a reserve of strength over the actual working strains, it will, I think, be most desirable in all the early cases for the surveyors to obtain all possible information as to the suitable quality of the metal, the scantlings used, or the reductions which builders may make, the system of rivetting, &c., prior to their issuing a declaration.

In all such cases wherein a full reduction is claimed in favour of the material, I further beg to submit that the vessel should be considered as experimental, and that frequent easily-made surveys should be held during the first year. These surveys need not be of such a character as to interfere in the least with the engagements of the vessel, but they will afford the Board a prompt and effective means of checking any evil which may be found to arise.

I am, &c., (Signed) JAMES WIMSHURST.

The Assistant-Secretary, Marine Department,
Board of Trade.

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REWARDS.—BOARD OF TRADE (MARINE DEPARTMENT), FEBRUARY, 1878.—The superintendent should obtain, when possible, a statement on the annexed Form, Wr. 53, of the particulars of any services rendered by a foreign vessel to the passengers or crew of a British vessel in distress at sea, or on the coasts abroad. Ser-

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vices by one British vessel to the passengers or crew of another under similar circumstances should also be reported, but only in cases in which considerable risk has been incurred in effecting the rescue.

EXAMINATION FEES.—There appears to be some misapprehension with regard to the payment of examination fees, and also with regard to obtaining statements of service verified by the Registrar-General of Seamen. The Board of Trade have, therefore, decided to issue the following regulations upon the subject:—Candidates for examination will, in future, be required to make their application on Form Exn. 2, and to pay the examination fee before any step is taken, whether by inquiry into their services, or testing their qualifications, &c. No part of the fee will be returned to them, but should it be found that their service is not sufficient to enable them to be examined, they will be allowed to present themselves for examination without paying any further fee when they have fulfilled the requisite service. A statement of services, verified by the Registrar-General of Seamen, may at any time be obtained by application to that officer, upon payment of a small fee, regulated by the amount of service which is required to be verified.

WRECKS ABROAD.—SHIPWRECKED SEAMEN.—The superintendents at the ports named below are instructed to report by telegram to the Secretary, Lloyd's, Cornhill, E.C., as well as to this department, the arrival of shipwrecked seamen at their ports. The exception stated in the last paragraph of the instructions contained in Circular 879 respecting wrecks abroad still applies to reports to this department, but telegrams should in all cases be sent to Lloyd's. The Committee of Lloyd's have engaged to supply telegraph pass books to be used by superintendents in communicating with their secretary. One of these pass books is now forwarded to the superintendent of each of the ports named in the accompanying list, who should inform this department when another book is required: Alloa, Borrowstoness, Chepstow, Chester, Cork, Gainsboro', Glasgow, Greenock, London (St. Katharine's Docks), Poplar, Port Glasgow, Preston, Runcorn.—T. H. FARRE, *Secretary*: THOMAS GRAY, *Assistant-Secretary*.


THE
NAUTICAL MAGAZINE.

FORTY-SEVENTH YEAR.

VOLUME XLVII.—No. V.

MAY, 1878.

COME ALONG, JACK.

HE Select Committee on the Merchant Seamen Bill has had many sittings. Witness after witness has rambled from the points of the inquiry, and it is difficult to say what subjects the report of the Committee may not include. The main issue has clearly been taken on the fourth clause—that is to say, the clause which places the sailor and the tailor in the same category. This clause is regarded by the shipping interest as a veritable puzzle. As a question of abstract economy, it is however quite justifiable. As a matter of practical sense, or as having anything whatever in it calculated to enhance the interests of the Mercantile Marine generally, or of Mercantile Jack in particular, it is deemed by shipowners to be absolutely a void. Judging from the utterances of Her Majesty's Ministers, the fourth clause is the fulfilment of the pledge to introduce into their Seamen Bill, for the notice of Parliament, some clause which would fairly raise the question whether the tailor in the merchant shop and the sailor of the merchant ship are ever after to be treated alike in the matter of contract. Having served the useful purpose for which it appears to have been intended, the ship-

ping community fervently hope that the Committee will see their way to consigning it to a peaceful end. We are not aware that it has been said by the present Ministry that the Workmen and Employers Act *shall* be made to apply to seamen. Had they made such an announcement, or had they proceeded on that assumption, there would have been an end of the matter ; for, in the first place, such an announcement would have shown that Ministers had themselves dealt with all the bearings of the subject, and a Select Committee would have been unnecessary ; and in the second place, it would have prevented any necessity for the great opposition which has been raised against the clause, for the Government is at present strong enough to carry anything. Ministers have not, however, proclaimed that the Merchant Seamen Bill, without the fourth clause, is not a Merchant Seamen Bill of the Conservative party ; but, on the contrary, have, as it appears to us, so drawn and constructed the fourth clause that it can be used for the purposes of discussion or for ballasting, or for top hamper or deck cargo in their ship, and can, if necessary, be jettisoned without endangering the goodly structure in which it forms so striking an object. Speaking generally, there has not been a single well-informed witness before the Committee who has not condemned the fourth clause, and it is clear that many members of the Committee are against it. What the report of the Committee will be probably depends a good deal on the line taken by the minister who has acted as Chairman, but the nature of the report can hardly be speculated upon. One thing is, however, very certain, and that is that to a preponderating extent the matter has been regarded from a one-sided point of view.

What we mean is this. It is not possible to have a horse marine, or an aquatic tailor. The work of a marine, that is to say of a sailor, must be performed on board ship, and is of the ship shippy, and he must be subject to sea laws ; the work of the tailor must be performed on his own shopboard, and is of the shop shoppy, and must be guided by shop law. No good can be done by attempting the impossible. A sailor is, not from the moment when he joins his ship but from the moment when he becomes a sailor, a different being subject to entirely different influences from

the tailor. To assume that a sailor before he joins his ship is one sort of being, subject to one set of influences, and after he joins his ship that he is another sort of being, subject to other and different influences, and that he is able to discriminate where one begins and the other ends, is being a little hard on the present generation of sailors, especially as many of them have not passed through the Board schools—and savours rather of a display of the acute and microscopical perception of schoolmen, than of knowledge of the actual condition of things, and the actual requirements of the sea service. If Jack the sailor and Peter the tailor are to be placed under the same law as to contract (which shipowners and many sailors hold is wholly, and which the advocates of the Bill admit is partially impossible), then why should not Jack's law be made to apply to Peter, instead of Peter's law to Jack. There are many who think that Peter is very much worse off under his law than Jack under his, and that it would be a good thing for every one if instead of attempting to give Jack a bit of Peter's law, Peter were to have a good slice of Jack's.

Merchant shipping legislation is not a subject that can be settled by party politics, but is really a question, and a very delicate one, of political economy; and it is for this reason that we find the Radical champions of the working man in such great force in the Select Committee on a Conservative Bill. Messrs. Macdonald, Burt, and Plimsoll are there as working men's champions, side by side with cooler and wiser heads of the Liberal party in politics, and face to face with the shipowners and others who possess a full knowledge of the subject. The Committee may be divided into four sections, one representing *Theory*, the other *Practical Knowledge*, a third *Statesmanship*, and the fourth *Sentiment*. The welfare of the Mercantile Marine depends on the third division.

At present, however, it is, as we have said, not possible to guess at the fate of the fourth clause, for those witnesses who have gone most against it, in their endeavours to show that the present system is good and is acted on leniently, have gone too far, have proved too much. They have shown that seamen at present are not arrested and proceeded against until the ship has sailed, and that the number proceeded against even then is so

small that it would be almost impossible to diminish it under a clause like clause four. Their contention is, however, that the present law acts as a deterrent, and prevents absences which the repeal of the law would encourage. This is the view we have expressed before a word of evidence was given, and we cannot, therefore, dissent from it ; and since conclusive evidence has been brought forward that the present law, which is theoretically harsh, is practically lenient and humane, and as there is a wonderful consensus of opinion that it does what all good laws ought to do, exerts for good a very great deterring influence on the men who might otherwise commit breaches of contract, it will be curious to see what process of reasoning or argument brought forward by the *Theoretical* and *Sentimental* members of the Committee will convince the *Statesmen* element that the *Practical* element should not be allowed to go on as they are at present. One point conclusive thus far, is that whatever may be the theoretical objection to the present statute law of arrest without warrant, and whatever theorists and refiners of argument may say about it, it is deemed by shipowners and seamen to be practically without objection.

But there is another reason why nobody can guess what will be the fate of Clause 4, and that is, no one seems to know at what point "arrest" and "persuasion" merge into one another. How little force does it take to constitute an "arrest," and under what circumstances is that minimum of force to be applied in the case of a seaman ; and, *per contra*, how much force may be applied as a "persuader," and under what circumstances may that maximum of "persuasion" be legally lavished on the corpus of the seaman ?

The honourable member for Plymouth has conferred on himself a new title, which we have placed at the head of this article—"Come along, Jack." The one question which has agitated the honourable member's breast, and has puzzled the brains of almost every witness before the Committee, is in substance this : "If a sailor is drunk, and you put your hand on him and say, 'Come along, Jack,' and help him aboard, you don't call that an arrest, do you ?"

If a certain amount of "helping" a seaman on board, the helping hand being accompanied by the encouraging words,

"Come along, Jack," or their equivalent, does not constitute an "arrest" within the eye of the law, provided the seaman is drunk, then the only question that will remain (and that is scarcely one for a Select Committee, but rather for a Court of Law) is, how much of the helping hand may be applied under those circumstances, and may any at all be applied if the rare case should ever happen that the man is sober?

This may at first sight appear to be a small point, and the schoolmen may regard it as eminently silly: but that is often their way with questions that are eminently practical.

Our readers will in an instant see its important bearing.

Suppose that the fourth clause passes into law and it is made illegal to arrest a sailor without warrant, then it will follow that no sailor can be legally "placed" or hove on board, or shall we say "assisted," on board without or against his consent. If by means of the advance note the shipowner and the crimp are linked together in a sort of, we will not call it a "conspiracy," but a "desire," to get the man on board, without rendering themselves liable to civil damages for the successful carrying into effect of that desire, will it not be to their direct interest that the man should be too drunk to object, or at all events too drunk to remember how he got on board, and whether he did or did not object. If he can remember nothing, the agency that will convey him on board will undoubtedly be the helping hand. Whether the passing of the fourth clause and the certain development under it of the crimping system (for it will necessitate the employment of a "crimp" by every owner) is better than the present system, is open to very great doubt. After all, a system harsh in theory and humane and considerate in practice may be better for all concerned than something theoretically perfect, but necessitating in its practice a resort to means never contemplated by its proposers.

The advance-note system is not dealt with by the Bill, and yet the great majority of witnesses have given evidence against that system. Is not the way out of the difficulty to substitute for Clause 4 Mr. Evelyn Ashley's clause, abolishing advance notes? If the advance note falls, all issues of any importance yet raised

on the motives for harsh arrest without warrant fall with it. "Freedom of contract," which is an essential in all bargains in this free country, and was the grand principle on which the Premier himself overthrew "an attenuated and diminished clause" in the Bill of 1875, will be established. Then will come into play the valuable suggestion of Colonel Hill, of Cardiff, that advances in cash should be given on the clothes of a seaman being placed on board either by himself or by his tailor; and it will be the shipmaster (and not the crimp) who will say, and say it in a very different manner from the crimp, because he will say to a sober sailor, "Your clothes are on board. Here is an advance in cash to pay for them if you want it. Pay your tailor, and let him clear out. There is a fair wind; we shall soon have a flowing sail, so, Come along, Jack."

THE SHIPWORM.

IT has ever been recognized as a principle in the world's economy that small and comparatively insignificant causes oftentimes produce great and important effects; especially is this the case in the kingdom of Nature, and the subject of the present paper affords one, out of many striking examples, which may be adduced in illustration of this principle. That a small and obscure wormlike creature, of retiring habits, and seemingly harmless, should be the means of destroying the piles of harbours and piers constructed at great expense, should imperil the safety of mariners by its insidious workings in the timbers of wooden ships, and should materially threaten the destinies of a whole country, are facts not readily credible, were it not that proof can be afforded that such has been the case; happily, its ravages have latterly been much diminished, and the greater use made of iron for building ships has lessened the opportunities for the exemplification of its destructive habits.

Seeing, then, that the shipworm has played no unimportant part

in the maritime history of the past, it is not matter for surprise that, from the earliest times, attention has been directed to it, and its organization and economy fully described in many treatises, of varied merits. Shipworms have been found in a fossil state in the tertiary formations of Europe, a fact which seems to indicate, though (for geological reasons which need not here be alluded to) by no means proving conclusively, their presence in the western seas from remote antiquity. From allusions in the writings of the classic authors, it would appear that they were known to the ancients. Theophrastus, a Greek philosopher and naturalist, who flourished in the fourth century before the Christian era, mentions "worms which corrupt wood in the sea;" Ovid also alludes to shipworms in one of his Epistles; and Pliny, who wrote much on the subject of natural history, and who died in A.D. 79, names "a large-headed teredo (or shipworm) which gnaws with teeth and lives in the sea."

Passing over several centuries, during which no records of the shipworm were made, or, if made, have not been preserved to us, we find mention of it in the twelfth century. It is related by Mr. Jeffreys in his "British Conchology" that in a collection of poems in the "Black Book of Carmarthen," written about this time, a monk, named Yscolan, whilst describing a penance to which he was subjected for some mortal offence, thus alludes to the shipworm:—

" A full year I was placed
At Bangor in the pole of a weir;
Consider thou my sufferings from seaworms."

From this brief allusion it would seem that the shipworm was at that time indigenous to this country. Its chief ravages have, however, been committed in Holland, and Dutch writers in the sixteenth century mention it as having destroyed many of the dykes in the island of Zeeland, by undermining the piles with which they were constructed. A further instance of its presence during that century is afforded by the fact that Drake's ship, on his return from a voyage round the world, in 1580, was found to have suffered much from its attacks. In the seventeenth century the shipworm was discovered in ships which had just

arrived at Amsterdam from India; this fact seems to afford some basis for an opinion which was then current, viz., that the European species of shipworm were introduced from the eastern seas, but naturalists are of opinion that such has not been the case, and that the western species are truly indigenous. By the older writers the shipworm was regarded as a worm having a large head, furnished with a fleshy tongue, a pair of powerful shelly jaws which served as the instruments of excavation, and a long tubiform body, with a tail-like bifurcate extremity; but, as will presently be seen, their ideas as to its structure and classification were, to a great extent, erroneous.

In the eighteenth century it assumed the character of a national foe of the Dutch people, and by its destruction of the piles composing the dykes and sea defences threatened the country with a serious inundation. Its ravages reached their height in the year 1733, and in that year several treatises were written on the subject, describing the shipworm in detail, and suggesting remedies for its depredations. The most learned and accurate work then put forth was by one Godfrey Sellius, a native of Dantzic, and a Professor at Gottingen University; he was more interested in politics than in natural history, and had the shipworm not been so identified with the interests and future of Holland, it is probable that he would never have turned his attention to the subject, and we should have been deprived of a most useful and valuable work, which opened up the way to further research. His monograph was one of the most complete of any that have been written, and when we remember that his previous studies had been confined to subjects not in any way connected with zoology, we shall be willing to accord him the highest meed of praise for his painstaking and laborious efforts in the elucidation of a difficult subject. Sellius was the first to give expression to accurate views with regard to the shipworm's organization; he rightly placed it, not, as did his predecessors, amongst the worms, which have ringed or jointed bodies, but amongst the mollusks or soft-bodied animals; he further showed that the so-called jaws were not jaws at all, but merely the two valves of a bivalve shell; also, that all the creature's vital parts were contained within these valves, and that

what had hitherto been considered the body was merely a cylindrical calcareous tube secreted by the animal and forming its habitation, thus being more auxiliary than essential. Sellius's work was illustrated from his own drawings, and he devotes many pages to the consideration of remedies and preventives, naming five or six hundred, some of which are more amusing than practicable.

Having thus glanced briefly at the past history of the shipworm, from the earliest mention of it to the last century, it may be as well here to supplement Sellius's description with one more in detail, and to correct such inaccuracies in it as subsequent scientific research has been enabled to point out; next, to consider its habits; the manner in which it bores; and, finally, the remedies which have been found effectual in preventing and lessening its depredations.

The shipworm, or teredo (from the Greek *τερέω*, to bore), belongs to a class of mollusks, all the members of which have the power of boring into stone, chalk, slate, wood, or other hard substances; the cavities thus formed becoming their habitations, and affording them shelter and protection. The teredo differs from the majority of this class in its wormlike structure, though it is also anomalous in other respects. Mr. J. G. Jeffreys, to whose standard work already mentioned we are indebted for much useful information in regard to this subject, gives such a clear and intelligible description of the shipworm, and one so little cumbered with purely technical details, that we prefer transcribing it to giving our own less lucid explanation. He says:—"It consists of a long and nearly gelatinous wormlike body, without rings or segments, terminating at one end in a pair of hemispherical valves, that somewhat resemble the two halves of a split nutshell which has had a large slice cut off at each side, and at the other end in a pair of a symmetrical shelly paddles, with handles of different lengths, which close this extremity at the will of the animal. The open part of the bivalve shell is placed at the further end, and receives a circular disk of a fleshy or rather muscular nature, which may be termed the foot; this is the broadest or widest part. Inside each valve is seen a curved process like a bill-hook, that projects from the hinge at a right angle. The shell covers and protects the mouth, liver, and

other delicate organs. The body tapers gradually to the outer or nearer end, where it becomes quite small and attenuated; it contains the gullet, intestine, and gills, and is enveloped in a thin membrane or mantle, which forms at the outward point two cylindrical tubes, mostly of unequal length; the larger tube takes in infusoria or similar animalcules, which constitute the food of the teredo, as well as imbibes water charged with air for the purpose of respiration and keeping the whole fabric moist; while the smaller tube is employed in the ejection of the water which has been exhausted or deprived of its æriferous qualities, and also serves to get rid of the woody pulp that is excavated by the teredo. Both tubes form a kind of hydraulic machine. At the base of each lies one of the paddles, often termed 'pallets' . . . When the teredo is alarmed, or not feeding, it withdraws its tubes into the neck of its sheath or shelly cylinder, and the pallets, which had been previously kept pressed against the sides, then spring forward and close the opening, so as to form an efficacious barrier against all foes. This complicated animal mechanism is entirely enclosed in the sheath or cylinder above mentioned, which is secreted by the mantle, and varies considerably in thickness and extent. The inside of the sheath is at its outer or narrower end divided into short strips or ledges, arranged in an imbricated fashion; the last formed of these ledges serves as a *point d'appui* for the blades of the paddles, and it greatly assists the teredo in shutting its doors."

The shipworm varies in colour, according to the wood in which it works, the sheath being of different shades, from whitish yellow to dingy brown; the valves of the shell are generally much lighter, and often of a pearly white. In the *Teredo navalis*, which is the species best known, the tubes are from six to nine inches in length, occasionally a foot, and about a quarter of an inch in diameter, the valves being rather less than half an inch long, and the same in breadth. These dimensions can only be regarded as approximate, and great variation in size has been observed. The shell is composed of ninety-seven parts of carbonate of lime and three of animal matter—phosphate of lime, usually the most important constituent of bony structures, not entering

into its composition. The teredo is said to be possessed of a very unpleasant odour, doubtless derived from the wood in which it dwells. It is very sensitive to changes of temperature, and is therefore met with mostly in warm latitudes, as an extreme degree of cold proves fatal. It is usually found at no great distance from the shore, though of course, when attached to ships' timbers, it is involuntarily transported to mid-ocean, and sometimes finds itself many hundreds of miles from land. The young are developed from greenish-yellow eggs, hatched in the body of the parent, and ejected in an immature or larval state. At this stage of existence they are first furnished with vibratile cilia, or fringes, which, moving about rapidly in the water, create centripetal currents, thereby drawing to them their food. They soon attach themselves to wood of some sort, and at once commence boring. Having once acquired a habitation, they undergo development until the adult stage is reached. The time occupied in completing their metamorphosis from the egg to the mature shipworm is supposed to be only a few months, and, as a great number of eggs are hatched, the teredines increase and multiply very rapidly. When in the larval or preliminary stage, and before it has found friendly shelter and concealment in some piece of wood, the teredo falls an easy prey to small fishes, crabs, &c. ; and even in its adult state it is not altogether free from enemies. It attacks wood of all kinds, from ships' timbers and the piles of harbours and piers to floating trees, corks, and even cocoanuts. Its destruction of ships caused Linnaeus to name it "*calamitas navium*." The hardest oak and the softest pine seem equally acceptable. Its usual mode of boring is to follow the grain of the wood, whenever possible, and if it meets with obstructions, such as hard knots or nails, its plan is generally to work round them, and then continue its previously direct course. This is not an invariable rule, and having power to bore either hard or soft wood, as just stated, it not unfrequently pierces through the knots. The galleries are in a horizontal direction, whenever the nature of the wood attacked admits of their being so. The wood in which the shipworm dwells is essential to its existence, and when taken out of it it quickly dies. The excavations are of a circular shape, and the

walls of the cavities very regular and smooth. It is said that the teredo's method of boring suggested to Brunel his plan of tunnelling the Thames.

The teredo is gregarious in its habits, never being found in a solitary condition. Nevertheless, each individual keeps strictly to its own burrow, the different tracks being sometimes so close to each other that a mere semi-transparent film separates them. But as all the shipworms in a piece of wood do not necessarily bore in exactly the same direction, it is manifest that a collision must sometimes be inevitable, and the manner in which they avoid this is somewhat interesting. When the respective tracks are perceived to be approaching each other in such a way as to render certain their ultimate meeting if prolonged, the shipworms secrete a dome-shaped epiphragm, or plug, at the end of the gallery, which effectually arrests further progress, and the unfortunate individuals so circumstanced, whether young or old, cease boring and remain *in situ* for the remainder of their lives. The epiphragm thus formed may be fitly compared to the filmy covering secreted by snails when about to hybernate, or when deprived of food, except that in the case of the snail it is dissolvable at will, whereas as respects the shipworm it is not so. Sellius was of opinion that, being thus deprived, as he thought, of its food, the shipworm perished, but it has since been proved that the wood excavated does not in any degree contribute to the animal's sustenance, and an analysis of the woody pulp thrown out has shown that it does not undergo the slightest chemical change. The food of the teredo in reality consists, as already mentioned, of minute animalcules and other organisms, strained off from the water introduced through one of the tubes.

There are six or seven different species of teredo, some much larger than *Teredo navalis*, the species we have been considering as typical, in fact, *T. Norvegica* sometimes attains 2½ feet in length, and the valves of the shell nearly an inch in diameter; this kind was some years ago very destructive to piles in Falmouth and Plymouth Harbours, but through the exertions then made, it seems to have been completely extirpated in these localities. Later still, it has been found working great mischief in the

Harbour at Portpatrick, in Scotland, though whether it is still to be found there we are unable to say.

The shipworms work assiduously and without intermission, and it is surprising how soon a colony of them will destroy a large extent of wood. A piece of deal after forty days immersion was found to be completely riddled by them; and Mr. Thompson gives an instance of a piece of pine wood, 9 inches in diameter, which had been employed for rather more than five years as a pile, it was 15 feet below high water mark, but was left dry at low water of spring tides; on being examined at the expiration of this period it was found to have been so attacked as not to contain more than one inch of solid timber in any part, and in some places it was completely bored through. In the dockyards at Plymouth and Devonport the shipworms destroyed oak piles, &c., to the value of about £8,000, in one year. In the year 1860 a Committee of the British Association, at the instance of Mr. Jeffreys, seeing the amount of damage the teredo was capable of doing, applied to the Admiralty to organize experiments with a view to prevent further mischief, but that department did not see its way to comply with the request, and the proposed experiments were never carried out. One point which has never been definitely set at rest is the maximum depth at which the teredo will attack wood; it has been said that about 15 feet is the limit, but this requires confirmation before it can claim general acceptance.

There are several theories which have been held to explain the shipworm's boring; we here give four. First, that it is accomplished by means of a rotatory motion of the valves of the shell, after the manner of an auger; second, that it is produced by the rasping of siliceous or flinty particles in the animal; third, that it is effected by the macerating action of currents of water set in motion by the teredo, assisted by its foot, which is of a fleshy and adhesive nature; fourth, that the shipworm bores by means of a chemical solvent, either secreted by the animal itself, or else extracted from the sea water; with regard to which latter assumption it has been thought that the agent is hydrochloric acid, which is contained in all sea water, in union with sodium,

forming chloride of sodium or common salt, and that it is liberated from this connection by the decomposition of the water, which the shipworm is said to effect. As respects this theory of a chemical solvent, it may be further remarked that the borings are remarkably regular and even within, whereas an acid would attack the hard and soft parts unequally, and so render the interior surface of the walls more or less irregular; this objection appears to be a cogent one; and with regard to the acid being secreted by the animal itself, as some have held, it may be stated that experiments have failed to extract it, and there is therefore no proof of its existence. The third explanation we have given is considerably less open to objection, and M. Quatrefages, a distinguished French naturalist, considered it to be the true one. He says, "the interior of the gallery is constantly saturated with water, consequently all the points of the walls which are not protected by the tube are subjected to constant maceration. In this state a mechanical action, even though inconsiderable, would suffice to clear away the bed of fibre thus softened, and if the action is in any degree continuous, it suffices to explain the excavation of the galleries, however extensive their ramifications." There is much to be said in favour of the boring being accomplished by means of the edge of the shell, in conjunction with the foot, which acts as a pioneer, and prepares the wood for the cutting action of the valves of the shell; in fact, this view may be said to be that most generally accepted at the present time. A remarkable instance of the powerful mechanical action of the foot of a mollusk is afforded in the case of some limpets which had, by this means alone, created depressions of some size in a hard slaty rock.

Seeing that the shipworm has done so much mischief, it is only natural that the subject of remedies and preventives should have received careful consideration by those who, from time to time, have made its organization and habits their special study. The ancients were so amazed at the destruction caused by such a small creature, that they regarded it with somewhat of a superstitious dread, and scarcely ventured to face the plain question of what was to be done to check it. Sellius was the first to deal with the matter at all practically,

but he suggested remedies so many and complex, including specifics of various kinds, compounded "with all the skill of the apothecary," that his well-intentioned instructions tended rather to confuse than render material assistance. Amongst other things, he mentions, for ships, "an inner layer of calf-skins, cow-hair, pounded glass, ashes, glue, chalk, moss, or charcoal," certainly rather strange remedies, but Mr. Jeffreys states that some of them are still used by the Turks and Arabs in the Mediterranean. Preparing timber with creosote was another means which he suggested, and this was to a great extent successful. The Portuguese used to scorch their vessels, and so incrust them with charcoal to the depth of about an inch, but the process was attended with risk, inasmuch as the want of proper care might result in setting the whole ship on fire. In the present century a process was patented for hardening wood by forcing into it silicate of lime, which the teredo would not attack; this method does not seem to have been used to any great extent, and we are unable to state whether it was found efficient. The shipworm is known to have an inveterate antipathy to oxide of iron or rust, and timber impregnated therewith is secure from its attacks. A method of preparing timber for shipbuilding purposes has been employed, which consists in impregnating the wood with rust by submerging it for a time in a solution of oxide of iron. The copper sheathing for ships, now so generally employed, though expensive, is perfectly effectual, and so, also, is the material known as yellow metal, which has been extensively used for coating dock gates. For piles of harbours, piers, &c., broad-headed iron nails placed close together have been usually employed, but the coating of rust created by the sea-water wears off in time, and the shipworms effect an entrance in the unprotected parts; this remedy cannot, therefore, be considered altogether satisfactory. There is thus scope left for the further development of this branch of the subject; and doubtless the characteristic inventive genius of the age in which we live will devise some means, at once inexpensive and effectual, whereby the ravages of the shipworm may be minimized, if not altogether prevented.

ACCURATE NAVIGATION.

BY CAPTAIN MILLER.

THERE are many non-nautical critics, learned as well as unlearned, who take it for granted that navigation as a perfect science is always available to the navigator. They seem to think that under all circumstances he has simply to work out a few problems, which they suppose can be done at any time, and if done correctly and properly applied must necessarily lead to infallible results. Notwithstanding the apparent blunders, the numerous casualties, and the pile of evidence to the contrary, that continually come to light through our Courts of Inquiry, these persons comment as flippantly on any particular case of casualty as though there were no reason why a ship should not arrive at her destination as accurately as a railway train, which, starting from one end of the kingdom, runs up to its terminus at the other within a foot of the platform.

Unfortunately for the value of these comments, there are no rails laid over the seas, and until this is actually achieved ships will continue to deviate from straight courses. As Nature is said to abhor a vacuum, so ships in their courses seem to abhor being kept to perfectly straight lines. All that science does for the navigator is to aid him occasionally; occasionally, I say, because science in her attendance on him is very whimsical, being present only when her assistance is least required, and invariably being absent when her assistance is most needed. When, for example, the navigator has the full use of vision and can see everywhere around him, when through having the use of this vision there is no risk of his running his ship into danger, and navigating her is comparatively an easy process, then science, with her brightest smiles, is always present, ready to overwhelm him with the tender of her innumerable problems to verify his position. But when having to run for some iron bound coast, the weather thickens for some days previous to his reaching it, and wind and sea press and heave the ship an unknown amount from her track,

when all is thick, dark, and dreary, and vision altogether fails, when the ship may be said to be running through a sort of "valley of the shadow of death," where then is science with all her bright smiles and tenders of assistance? These are the times when the navigator most needs her presence, but these are the times when she always absents herself, and leaves no other assistance to aid him in his most difficult and delicate work than that assuming and guessing old pilot called "dead reckoning."

I wonder why our ancestors called this old pilot *dead*. He is certainly not yet dead, for we have him now piloting ships in these days. He still has sufficient life to undertake, in the absence of science, to pilot ships to their destination. He is, however, very old and very unsuitable for the times, his range of vision is far too small for these go-ahead days—he was always very near and weak-sighted at best, but he got on very well in his younger days with our ancestors, whose ships were slow, and *time* with them was no very great object. With them he had always ample time at his command, and he took great care to make every use of it, for when he could not see and became a little uncertain of his position, he would stop. Stopping in those days was neither a fault nor a danger, so he stopped for every shadow of a doubt. By this expedient he could easily keep what perceptions he possessed well in hand, but he cannot now resort to this expedient, the times will not admit of it. Speed, speed is the great demand of the age. He often therefore loses control, becomes bewildered, and leads ships with all on board frequently to disaster and death. If it was in this sense that our ancestors called him *dead*, it is an appropriate name for him, for his piloting leads so very often to fatal disaster. Nevertheless, this untrustworthy old pilot is all the assistance the navigator has to aid him whenever science hides her face, and unfortunately for our climate she does this for many days together, and far too often for the interests of life and property. Sometimes thick weather sets in 500 or 1000 miles to the westward of the Channel, and continues until the navigator either gropes his way to his destination, or adopts the "Westminster Abbey or victory" principle; depends on dead reckoning, and runs for it regardless of consequences. Both of these princi-

ples have their followers, and the latter, strange to say, often succeeds, though there is no basis of certainty in the correctness of any of their calculations. Their figures and problems may indeed be perfect, but unfortunately "dead reckoning" is not simply a question of figures, it is made up also of a number of assumptions and guessings, none of which in thick weather can be checked.

In the first place, no helmsman can steer a course accurately ; some steer much better than others, but the best cannot conn the ship as though she were running on rails. The course is given to a quarter of a point, sometimes to a degree, and the seaman simply makes the best use he can of it. But much uncertainty surrounds even the best performance when the ship is running for land in and after continued thick weather, no matter how smooth the sea ; and naturally in proportion as the sea is rough will this uncertainty be aggravated. The science of navigation, as yet, does not supply the navigator with any instrument that will register the amount of deviation from a straight course, made in consequence of defective steering, and the question therefore is, when the light of science is absent, and vision as a preventive to disaster useless, what margin of error is to be allowed for it, and which way, whether to the right or to the left ? But science is absent, she does not answer this question ; and as for "dead reckoning," he is too stupid to give it even a thought ; in this case, as in all cases excepting those for which he allows lee-way, he assumes that the course given to the helmsman is "made good," and all his calculations are based on this assumption.

Besides defective steering, science has left the navigator, in an iron ship, to find his way in thick weather as best he may, with a very defective compass. This is the case whether it be an uncompensated standard or one said to be adjusted. What a fraud on the understanding and practical experience of the navigator it is to say, because a number of magnets are screwed down to the deck round his compass, acting at cross purposes with each other, that therefore his compass is adjusted. In spite of any number of fixed magnets that can be placed round it, it is not adjusted. It is only a rude attempt at adjustment, and a very delusive one also.

But let us consider the value of the standard compass towards making an accurate course, as this is the one, doubtless, that the navigator will employ. Now the compass-card, with its magnetic needles, somewhat resembles the fly-wheel of machinery, with this difference, that, instead of being expected to revolve on its axis, it is its duty to stand perfectly still, while its axis and the ship revolve under it. If the wheel of the machinery is perfectly balanced, then there will be no disturbance of its regular action by the law of gravitation, and if, with the compass, there is no magnetic disturbance, the card will stand quiescent, while the ship is supposed to revolve round and round under it. Of course in this experiment there will be a slight drag of the card, but this will be the same on all points alike, and will not, after the ship's head has passed the first point, interfere with its quiescence. If the machinery again is imperfectly balanced then the action of the flywheel will be very irregular and there will be, in compass language, gravitating disturbance of its action, sometimes making it questionable whether the machinery will turn over its centre. This irregularity is usually compensated by attaching in its proper place a balance weight to the wheel. But let us suppose this machinery left to work without this balance weight. The irregularities then occurring in each revolution will serve to illustrate the irregularities of the action of an uncompensated compass. As the ship revolves round and round, the card instead of being quiescent will have motion, at one point of the ship's revolutions its north will be drawn two points or more, according to the amount of disturbance, to the east of the magnetic north, and at another it will be drawn a corresponding amount to the westward and there will be, as in the revolutions of the flywheel, no uniformity in its action. At one point of the ship's revolutions the changes will be slow and at another fast, and when like the flywheel it is turning over its centre, it will appear to stop, and when at another point it will get over a number of degrees with a jump. All this takes place with an upright ship, but when she heels over all the irregularities of its action are much increased. The Liverpool Compass Committee many years ago stated that the heeling in some ships would have an effect on the compass to

one and a-half degrees for every degree of heel, and yet few if any ships have ever had this dangerous source of disaster compensated. This, however, can excite no astonishment when it is remembered that all attempts to compensate the other sources of error, with even an upright ship, have hitherto failed. How therefore can an accurate course be expected from such a defective instrument? Nevertheless, "dead reckoning" when running for land in thick weather has nothing better to make a course and to turn unseen points.

The next thing to be considered is the force of wind and heave of the sea acting on the ship at right angles to her course. Here again science in her absence leaves behind no instrument with the navigator with which he can register the amount of broadside pressure and heave of the sea, or the amount of deviation from a straight course that these will give rise to. In this case also the navigator is left exclusively to that guessing old pilot "dead reckoning" again.

"Dead reckoning" notices broadside pressure, and makes an allowance for its influence under the name of "lee way." It does not, however, cost him any hard thinking to arrive at the amount to be allowed. With him, there is no great difficulty in obtaining it; one, two, three, or more points, according to his glance at the weather, is arrived at with a bound and a jump. There is nothing to check his guessing, nothing short of actual disaster, and should this occur, the blame and consequences fall exclusively on the navigator, they in no way affect him, and so he goes on guessing and guessing the thousands upon thousands of deviations from straight courses, which are continually occurring, the fallacy of which only those ships that meet with disaster ever bring to the light, and this he will continue to do until science finds out some more worthy pilot to leave with the navigator in her repeated long intervals of absence from him, or otherwise finds out some practical and more satisfactory means than has hitherto existed for the navigator to check all his assumptions and guessings.

Then there may be a drain of current acting at right angles with the ship's course, for who, at any time, can say that the surface waters on any part of the globe, at the time he is navi-

gating them, are without movement and at perfect rest. "Dead reckoning" takes it for granted that where no current is noticed and marked on the chart as existing that there never has been any, and that there never will be, as he also takes it for granted that where a current is marked it is always running, and will ever continue to do so, and at the rate indicated. But even in well-known currents, such as the Gulf stream, on account of their variableness and the continual change of ship's position, "dead reckoning" in his allowance for them is likely to be as often wrong as right. Such a current as the Gulf stream in its axis may run with some degree of uniformity, allowing for seasons and weather, but it certainly does not anywhere else within its marked limits.

Again, known currents with a velocity of one, or a half, knot, are marked on our charts, but are there no currents running from twelve to one mile per day? Certainly there are, for it may be questioned whether the surface waters are anywhere quiescent for any time together. Ought it, therefore, to surprise anyone, even where no current is marked, for a ship to be carried in a day's run six or more miles from her track, may be at right angles with her course by this one subtle agent alone.

Then there is the common log to measure the distance run. What a rough instrument it is on which to stake the interests of life and property when running for land in continued thick weather! When its character is considered, the amount of intelligence at command to heave it, the influences surrounding it to produce changes in its revelations, and the difference of speed maintained in the interval of the two hours in which it is generally thrown, three per cent. margin for error would be the minimum allowance that could be made for a day's run of, say, 800 miles. Here, therefore, in one day, as the error may be over or under, is an uncertainty of eighteen miles. And yet, after all, the common log is more reliable than the patent. The ordinary lead descending in the water gives results in conformity with its theory, but the patent log towed on the surface water is very uncertain in its results and baffles all calculations, as no rate can be fixed to it; at one time it is over, at another time under, and

all attempts to fix a percentage of rate, either one way or the other, utterly fail. In a steamer its results are very variable, and its changes are as frequent as those of the weather on which it appears to me in a great measure to depend. "Dead reckoning," however, has nothing better than these logs to measure the distance run, and when having to turn unseen points of land, some accuracy is necessary, in order to avoid danger on the one side, and bewildering dead reckoning on the other, consequent on running in thick weather out of his intended track. When all the difficulties connected with accurate navigation in thick weather are considered, and the many disasters which that deceiving old pilot, "dead reckoning," has led to, coupled with the severity with which the navigator has been visited for only a misplaced confidence in him, it would only be fair that "dead reckoning" should be visited with some of the blame and have his certificate suspended also.

When all these things are considered, may not the navigator very appropriately say to science, who never seems at rest, but constantly at work finding out new and simpler methods to aid him in her presence to verify his position, "Enough, enough; where thou art present our path is illuminated with thy light; we have no difficulty then to contend with. It is only in thy absence that our difficulties commence, and these increase in proportion to the length of it. Canst thou not, considering all the interests that are at stake, leave with us some small ray or glimmer of thy light in thy sometimes long absence from us. It is well known to thee that 'dead reckoning,' who is thy first offspring, has grown old and untrustworthy for these 'go-ahead' times. It is well known to thee that he has not made one single step of advancement to meet the requirements of this progressive age, and it is also well known to thee that on account of his great age he inspires in the inexperienced navigator a certain veneration and false confidence which too often leads to disaster and death. It is thy province to grapple with difficulties. In this almost untouched field there is ample room for the full exercise of all thy great powers. Leave with us, therefore, in thy absence something more consistent with the demand of these times of rapid transit, than that blundering old pilot called 'dead reckoning.'"

Every navigator who aims at and loves accuracy, whether in narrow seas or in the broad ocean, will hail with satisfaction every new invention which in any way contributes towards its attainment, or any that will check the assumptions and guessings of "dead reckoning." Two instruments have recently been brought out, the one contributing largely towards making an accurate course, and the other to check the deductions of dead reckoning. I allude to Sir William Thomson's patent compass and patent lead. The former of these instruments if it does not enable the navigator to run his ship as though she were running on rails, at least it enables him to run nearer thereto than anything that has yet been supplied. From the time that the Astronomer Royal in 1854 laid down the true theory for producing perfect compensation of an iron ship's compass until Sir William Thomson's compass was invented, it has not been attained. During this long interval I have utilised every opportunity, and tried every imaginable experiment with the ordinary compass to attain it, but owing to the weight of the card could not succeed in correcting the quadrantal deviation. The chain-boxes fitted with chains that were generally attached to the binnacle for this purpose, had no effect, and the piles of chain that I used to apply in my experiments gave no appreciable effect either. I conclude, therefore, that with the old compass card, owing to its weight, to correct its quadrantal deviation is impracticable.

Sir William Thomson gets over this difficulty by inventing a card so light in its construction, that two iron hollow globes about eight inches in diameter properly placed, makes the correcting of the quadrantal error possible. With this card it can be even over-corrected, consequently it is a simple matter requiring no more scientific knowledge than is necessary to rate a chronometer, or adjust a sextant, to produce a really compensated compass. The advantage of all this towards making an accurate course must be apparent. Like a perfectly balanced fly-wheel of some machinery, it becomes uniform in all its action. While the uncompensated or partly compensated compass, whether liquid or otherwise, when the ship is running before the big seas of the Atlantic, is all wandering, Sir William Thomson's compass is

quite steady. It is therefore quite an acquisition and most helpful towards making an accurate course, and more especially if the helmsman has it to steer by.

The neglect to heave the lead has led to much disaster, and many certificates have been suspended for it. It is generally taken for granted that it is a very simple process, and that there is not the shadow of an excuse for not constantly heaving it when near land. In fact many navigators have been regarded as idiotic for not keeping it constantly going, but it appears to me this state of idiocy can be reached on the other side. Going out as a hired transport on the Abyssinian expedition I was made by the transport officer to heave the lead going out of the Birkenhead dock gates. In the Royal Navy the lead has to be cast whether of use or of no use. It is a rule of the service, and must be carried out. There is in all this no extravagant demand, for the number of men there under command makes it an easy duty, and they can afford to expend labour where there is only a very remote chance of its being of any use. This is not so in the merchant service. The amount of labour at command there does not admit of its being expended on work that is not apparent will be of some service. As a result of their training, Royal Naval men too often judge harshly the shortcomings of the merchant service; they forget that no amount of tyranny that can be resorted to can obtain from a limited crew the same attention to details in navigation which can be obtained in the Royal Navy with double and treble the amount of men. Until, therefore, merchant ships are manned equally with the Royal Navy, it will be unjust to judge their management from the same platform, and it will be in vain to expect from them the same attention to details. With the limited crew of a merchant sailing vessel, in disagreeable weather, the heaving of the lead has always entailed considerable extra work on the watch at a time when men could be least spared for the duty. In a screw steamer the ship must be dead stopped to obtain a reliable cast, and to insure that the propeller does not cut the line. These, with many other difficulties attending its use, account for its frequent neglect. With a more simple method of casting the lead, this neglect would vanish.

Sir William Thomson's patent deep-sea lead can be kept, if required, constantly going; and in those ships that have an after wheel-house, and conveniently near the taffrail, the machine can be worked inside and made a permanent fixture. This arrangement saves the attendance of one man at night to hold a light, as the wheel-house light can be hung in front of the indicator. Here therefore, free from all weather, in a comfortable, lighted-up room, without having to haul in a wet and sometimes freezing line, two men can, if necessary, cast the lead every five minutes, with more satisfactory results than could be obtained by the ordinary lead and line without the ship were dead stopped. It is not my province to enter into the details of this lead, and I think it will be more satisfactory to the reader if I limit myself to its results.

While the casting of the ordinary deep-sea lead on a cold and dirty night is a most troublesome and disagreeable duty, the casting of Sir William Thomson's lead by two men only is little more to them than an amusement. Like every other instrument it requires a little acquaintance to manage it perfectly. To obtain this I commenced my experiments in the Atlantic, where there was no chance of touching bottom. After attaching the tube that measures the depth of the lead, the ship going twelve knots, 100 fathoms of wire were allowed to run out, in four minutes the cast was completed, and the tube showed a perpendicular depth attained of 75 fathoms. This experiment was repeated a number of times with about the same results. The conclusion drawn from them was that it was not prudent to allow the lead to descend with such velocity, and in all future experiments the amount of restraint put upon the drum at the same speed of 12 knots gave 50 fathoms for 100 fathoms of wire run out. This, I considered, was the safest speed to work the instrument, and made any further use of the tube, except in experimental cases, quite unnecessary. Having worked out the amount of restraint necessary on the revolutions of the drum to give the perpendicular depth one-half of the wire run out, with the ship running 12 miles an hour, it was easy to write out a rule for any other rate of speed of the ship sufficiently accurate for all ordinary purposes. With

this rule I ran along the north coast of Yucatan, over the Campeche bank, for nearly two days, the lead going every half hour, keeping mainly, while along the coast in the soundings, between five and ten fathoms, without either the rule or the lead failing. Steaming, again, in the Mississippi, to and from New Orleans, the experiment was similarly repeated. Again, rounding the Florida reefs and coast, the same experiment was continued. Again, crossing the banks of Newfoundland, it was renewed; and, at last, from the Fastnet to the bar of the Mersey. I have therefore given this lead a thorough testing.

Here at least science has answered the aspirations of the navigator and supplied him with an instrument with which in her absence in thick weather he can check the deductions of dead reckoning, feel his way approaching any coast, sail along it without losing his track, round certainly and with confidence unseen points of land, and all without inconvenience to anyone. With such a lead on board the neglect to heave it would indeed indicate some degree of foolishness, but the neglect to use the lead ordinarily in use proves only too much consideration for the crew's opinion on such matters, and a consequent dislike to tease and annoy them by forcing them to perform repeatedly what on a hard cold night is to them an exceedingly unpleasant duty.

THE "EURYDICE" SQUALL.



THE disaster of the 24th March, 1878, will not soon be forgotten, for its memory lives in many aching hearts, but the meteorological conditions which occasioned it are likely to soon pass out of mind unless examined and recorded with some care. I propose in this communication, first, to describe shortly the more general weather conditions of the day; secondly, to investigate from the data at present in my hands the course, extent, and velocity of the squall in which the *Eurydice* capsized; and, thirdly, to make some observations on those par-

ticulars in which the squall was of a remarkable or instructive character.

The 8 a.m. reports of the Meteorological Office showed a large shallow depression east of the Gulf of Bothnia; in Scandinavia pressure was very uniform; moderately steep gradients for N.W. winds ($\cdot 017$ in., per 15 nautical miles, from Valentia to Shields) existed across the British Isles. The isobars and currents were somewhat wavy, a shallow secondary, with rain, lying over the N.W. of France, and another very slight one, with snow showers and a very low temperature, over the north of Scotland.

The 6 p.m. reports show a moderate increase of pressure to have taken place over the northern part of the North Sea. The lower isobars then bulged westward over the extreme north of England, forming a secondary depression over that district. A more important secondary then lay over the south east of our islands. Its centre was at that hour close to Yarmouth; bar $29\cdot 39$; but the $29\cdot 50$ isobar lying N.W. to S.E. from Liverpool to London trends from the latter southwards to Paris, and thence to N.E. through Belgium. The gradient between Valentia and Liverpool had risen to $\cdot 024$ in., and a moderate N. gale was blowing in the Irish Channel. No distinct trace of the squall is shown in these reports, for the disturbance had passed over England between the hours at which the observations were taken.

Very fine weather prevailed at 8 a.m. over nearly the whole of England. At many localities in Scotland and Ireland snow showers were then falling, but I am unable, from reports hitherto received, to identify the *Eurydice* snow squall either north of the Border or on the west of the Irish Channel. It does not appear to have been noticed at Dumfries or even at Holyhead. This letter may lead observers in the N. and W., who may be willing to do so, to communicate data from which the earlier stages—and, possibly, the first formation of the squall—may be traced. At present I incline to the belief that it originated over the Northumberland and Cumberland hills. The earliest notices of the squall yet received are North Shields, 9.35, and Stonyhurst and Liverpool, 8 a.m.

The accompanying table gives the times at which the snow-storm commenced and terminated at the different stations from which I

have received reports of its passage. I have appended a ? to the name of the station in the cases in which the identity of the squall is doubtful, and to the time when not assured of the exactness of the latter. An * signifies that the report was communicated by G. J. Symons, Esq.; † that it was obtained from, or by the permission of, the Meteorological Office; and ‡ that it was derived from a newspaper cutting. The direction of the wind, when reported, immediately before, and during, the squall is also given in the table, with a few remarks mentioning, when known, the time of greatest wind-force.

As regards the appearance of the storm-cloud, both in its approach and as viewed from the rear, the few observations which I have received are scarcely minute enough to convey a very distinct impression, for the cloud-observer is a *rara avis in terris*. The front edge as seen from Worcester striking the Malvern Hills is succinctly described by one spectator as "resembling a white wall." Another, who viewed it from Headly Common, in Surrey, calls it "an enormous black cloud like a monster balloon." Others speak simply of "gathering clouds." Mr. Glyde, one of the best cloud-observers in England, informs us that at Torquay "large cumuli, topped with cirri, began to show themselves in N.N.W., and gradually spread over" the sky, the snow and squall commencing 30 minutes after this appearance. This was nearly as possible what I noticed in Leicestershire. White fragmentary cumuli, under a very clear blue sky, had prevailed during the morning. The storm first showed itself in distant N.W. (stretching from W.S.W. to N.N.E.) as a bank of dense white cirro-stratus, with bold cumuli running up into its under surface. I predicted thunder and a squall (the first of which did not occur, while the second exceeded my expectations). About forty minutes before the storm came over, and I believe most weather-watchers who chanced to be on the look-out would have made a similar forecast, *at least in this part of the country*. The lines of cirrus gradually spread to the zenith, moving rather slowly from due N.W., their front edge being, as I reckoned it, about 20 miles in advance of the falling snow. As the snow ceased, 70 minutes after it had begun, the nimbus cleared

with a straight edge in W. by N. At 4 p.m. this edge could only be seen 20° above the horizon in E. by S., and this edge, composed of high cirriform cloud, moved at that hour, to my surprise, rapidly from S.S.W. over a N.N.W. under-current. Thus the position of the cloud-bank as seen approaching and retiring suggested the idea that the snow-storm was of greater width on the eastern than on the western side of this station.

This seems borne out by the greater duration of the snow fall on the east coast of England than on the west, for in Northumberland the duration was 1 hour 55 minutes, and at Grimsby 4 hours, whereas at Hereford it is reported as 20 minutes, and at Ross and Malvern 45 minutes.

In its progress south-eastward this peculiarity of contour seems to have been maintained, for at Camden Town you report it as lasting about 90 minutes, and Mr. Mawley gives the same duration for Addiscombe, whereas at Hurst Castle the duration was 45 minutes, and at Torquay 40 minutes.

It appears, however, that the eastern portion of the snow-storm travelled with considerably less velocity than the part which passed over the Midland counties. This fact is graphically shown in the two accompanying charts.

A change of an important kind also occurred in the snow-storm during its transit. In the north of England, and as far as the Midlands, the snow began some time before the severe part of the squall. Thus, at Stonyhurst, the wind rose to 14 miles an hour at 10 a.m., and reached 80 miles an hour at 11 a.m.; whereas in the Metropolis, and in the south of England generally, strong gusts occurred with or even before the falling snow. In Leicestershire the wind rose slightly with the fall of the first snow-flakes, but the actual squall, which I should estimate at force 7, did not occur till 15 minutes later, and scarcely lasted 12 minutes. It is also noticeable that in the north the wind continued to blow rather strongly at and after the end of the snow-storm, *e.g.*, at Stonyhurst it blew 20 miles per hour one hour after the sky had cleared; but in the south the wind, at the conclusion of the snow-storm, subsided very quickly. This is clearly shown in the Beckley's anemograph at Addiscombe, and Mr. Mawley remarks that "at the same moment

that it ceased snowing the wind dropped even more suddenly than it had risen an hour and a half before."

As regards the direction of the wind on the earth's surface, at most, if not all, of the inland stations the N.W. wind which had prevailed at the earlier hours backed to a point south of W. before the storm commenced, and veered suddenly northward (at most places to N.N.W., and at a few temporarily to N.N.E.) during the squall. At North Shields, which lay somewhat near to the centre of the small secondary at 9.30 a.m., the change of wind was from W.N.W. to N.N.E. The change at Scarborough was also from W.N.W. to N. At Yarmouth, which experienced the centre of the small depression at 6 p.m., the wind changed at that hour from S.E. to N.W. Snow is reported at this station to have fallen from "daylight to dark." But at none of the stations on the east coast does the wind seem to have blown with much force, and nothing remarkable beyond the sudden veerings seems to have been observed.

At some places in the south-eastern districts the wind is reported in the newspapers, probably somewhat hyperbolically, as blowing "from all quarters."

Estimating the velocity with which the snow-storm progressed from the time when the snow began to fall at Stonyhurst and at Hurst Point Lighthouse, we find this velocity to be 40 miles per hour. If, however, we reckon it from the time of the greatest force of what may be called the actual squall we get the velocity of $48\frac{1}{2}$ miles. It is, perhaps, scarcely needful to state that neither of these velocities necessarily represents the velocity of the movement of the air, or the wind occurring in the squall.

For the horological accuracy of the table I am not responsible, but assuming this to be in the main satisfactory, I have constructed from the table the two accompanying maps, showing approximately the areas covered by the snow-storm at 10 a.m. and 3 p.m. respectively, with the general directions of the surface-winds and upper-currents, the former shown by black, and the latter by dotted arrows.

Thus advanced, as if bent on its tragic mission, this remarkable storm-cloud. About 9 a.m. it left the Northumberland hills

covered with deep snow. Seven hours later it sent its icy blasts down the chimes of the Isle of Wight upon the hapless *Eurydice*, just returning, like her fabled namesake, to loving greetings—"jam luce sub ipsâ."

Shortly before 5 p.m. the snowstorm reached Crowborough Beacon. It swept over Brighton as "a hurricane of wind and blinding snow," and left our shores. The snow was falling at Cape Grisnez at 6. What modifications the squall may have undergone in crossing the Channel, or whether it was actually felt on the French coast as a squall at all, I have not at present the means of determining. Mr. Vibert reports a squall of soft hail at St. Aubyn's, Jersey, at 5 p.m., and the succeeding night was squally there.

As already mentioned, this squall is not reported as having occurred at Holyhead, where "there was nothing exceptional in the weather," but "the wind blew a fresh gale, with snow squalls throughout the day, nothing that would call for remark, and not a heavy gale at any time." It seems also not to have occurred, or to have been so slight as to escape notice, at some of the Welsh stations. Mr. Walker mentions, however, an extensive hail-shower, "decidedly a squall," at St. Ann's Head, at 0.30 p.m.

It is necessary to mention the subsidiary squalls which occurred during the day, especially between 4 and 6 p.m., in the N. and W. of the British Isles. A heavy thunder and snowstorm passed over Liverpool at 5 p.m. Lightning was seen at Stonyhurst, and also in the West Riding, about 8 p.m., and at that hour thunder and lightning occurred at Llandudno. At an early hour snow-showers are reported from S. Wales, Monmouth and Herefordshire. At Valentia a tremendous hail-squall occurred at 8 pm., and one at Pembroke, force 9, at 1.30 a.m. of the 25th.

As regards the conduct of the barometers in the *Eurydice* squall, I have but few data, but these are of great interest. At Stonyhurst, the general decline, which took place until 5 p.m.; was interrupted at the time when the squall reached its climax; pressure rising .028 between 11 a.m. and noon. At Babbacombe, Torquay, a somewhat similar rise occurred, .009 in ten minutes. At Falmouth, a well-marked jump, preceded by minor oscillations,

is shown in the barogram at 2.45 p.m. Finally, at Kew the barogram shows a rather larger and smoother rise of pressure at the time of the passage of the squall.

The thermometers at all the places traversed, from which I have records, fell with extreme rapidity during the squall. At Bedale the fall amounted to $13^{\circ}\cdot7$; at Stonyhurst to $7^{\circ}\cdot4$; at Falmouth to 10° ; at Torquay to $10^{\circ}\cdot9$; and at Kew to $13^{\circ}\cdot9$; but the fall at the last-mentioned station was more gradual. At the Royal Observatory, Greenwich, the fall also amounted to about 13° .

Mr. Cullum informs me that at the Valentia Observatory the photograms showed "decided jumps" of the mercury "at the time of the squalls," which occurred frequently throughout the day, and that these jumps "coincided with the dips in the thermogram, caused by the fall of hail."

How far the *Eurydice* squall was of an exceptional character it is difficult to decide, for the simple reason that we, at present, know very little either of the causes or of the morphology of squalls in general. I speak of *squalls* as distinguished from ordinary *storms* on the one hand, and from the very local *gusts* common in thunderstorms on the other. I have observed that squalls, in this restricted sense, commonly originate, in our latitudes, somewhat on the rear, but almost always on the right-hand half of a cyclonic circulation. In this respect they resemble our ordinary secondary depressions, and with the latter they appear to be sometimes united, although the majority of our secondaries are not attended by squalls. The few squalls that I have attempted to examine have had much their longest diameter nearly at right angles to the direction of the wind, or of the isobars. In these respects, the squall of March 24th may perhaps be regarded as typical. I believe, however, though I can scarcely prove, that the longest diameter of this squall exceeded the shortest, at least in the South of England, to an unusual degree. In one other respect it was decidedly exceptional, viz., in the backing of the cirrus current about 112° during its passage. Its influence upon the upper-current was, in fact, much the same as that which is produced by the transit of a large cyclone, and vastly in excess of that which usually occurs in the passage of small secondary depressions. This seems to indicate

that this squall was of extraordinary altitude, the vertical movements of the atmosphere which attended it being unusually extensive.

It seems clear that the disturbance was associated with, and at its eastern extremity attached to, the secondary depression which passed south-eastward down our east coast; and it may be worthy of note that the subsidiary squalls, which occurred at a later hour in the west, stood nearly in the same relation to the other but less important secondary noticed at 6 p.m., over the north of England.

I have trespassed already so much on your space, that I must only suggest for the consideration of your readers two—perhaps they are really one—of the numerous theoretical questions that occur to me. Whence comes it that in a squall like this the velocity of the wind is much in excess of that corresponding to the barometric gradient at the time of the squall's passage, whereas before and after the squall, the velocity is low in relation to the gradient? And how is it that the wind-curves around and in the squall are what we should expect if the barometers were lower beneath the squall-cloud than on the outside of it, whereas they are actually higher?

One practical remark. It is obvious (apart from the fact that storm-warnings would not have saved the *Eurydice*), that the data received by the Meteorological Office could have furnished no forecast of this squall, and that that office would not from those data have been justified in sending storm-warnings to our south coast. Whether far more frequent telegrams from a far larger number of observers, and at a much larger Governmental outlay, may one day furnish the means of foretelling the course of a squall successfully, is a question on which I shall not enter. At present I know of but one practical lesson to be learned from the disaster of March 24th, which is this:—Let meteorology, and, not least of all, the principles of cloud-observation, occupy a very large place in the education of seamen.

I am very grateful to the observers who have contributed the materials for this sketch, especially to Mr. Symons, to whom I owe many of the letters.

W. CLEMENT LEY.

[The above paper has been also communicated to Symons's *Meteorological Magazine*, but we are enabled to record the inte-

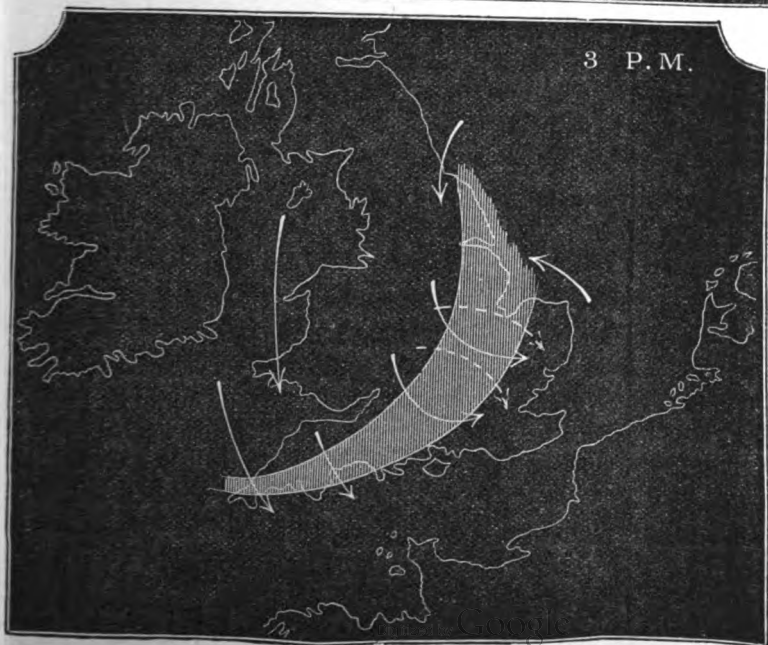
resting details in our pages through the courtesy of the author and Mr. G. J. Symons, whose aid in the preparation of the paper was of much value to the author.—*Ed. Nautical Magazine.*]

COUNTY.	STATION.	Snowstorm began.	Snowstorm ended.	Wind before Snowstorm.	Wind in Snowstorm.	REMARKS.	AUTHORITY.
Northumberland	North Shields ..	9.30	11.30	W.N.W.	N.N.E.	Gentle to fresh breeze.	A. S. Nicholson.
Westmorland	Copy Hill, Shap	11?	..	..	..	..	W. Hoggarth.
York	Bedale	10.20	..	S.W.	N.W.	Nimbus first in W., 10 a.m.	F. Stow, F.M.S.
"	Arnccliffe	10.15	0.0	..	..	Heavy snowfall.	W. Boyd.
"	Grassington	10.15	1.30	..	N.W.	Hurricane at 11 a.m.	S. Eddy.
"	Mines .....	..	..	..	..	..	..
"	Skipton	11?	..	W.	..	Gentle snow before squall.	"
Lancashire ..	Brindle, Chorley	10.25?	..	..	..	..	..
"	Stonyhurst	10	0.0	S.W. by S.	N.W.	Velocity 30 m., at 11 a.m.	S. J. Perry, F.R.S.
"	Liverpool	10	..	..	..	Severe snowstorm.	..
"	Manchester	10.40?	..	..	..	Snowstorm before noon	..
Lincoln	Killingholme,	1.30	5.30	..	..	Continuous snow.	J. Byron, F.M.S.
"	Grimsby .....	..	..	..	..	..	..
Shropshire ..	Shrewsbury	0.0?	..	..	..	Violent at noon.	E. V. Pigott.
"	Ludlow	11.55?	..	..	..	From N. towards S.E.	..
Stafford	Stafford	0.0	..	..	..	Snowstorm.	..
Leicester	Melton Mowbray	1.30	..	..	..	Snow with squalls.	A. M. Rendell
"	Lutterworth	1.50	8	W.S.W.	N.N.W.	Hurricane at 2.5.	W. C. Ley, F.M.S.
Hereford	Hereford	1	1.20?	..	N.W.	Hailstorm, strong squalls.	E. J. Isbell.
"	King's Capel,	1?	1.20?	..	N.W.	Squall, hail and snow.	A. Ley.
"	Ross	1	1.45	W.N.W.	N.	Violent for short time.	H. Southall, F.M.S.
Worcester ..	Tedstone de la	0.40?	1.30	..	N.N.W.	Violent.	F. S. Lea.
"	Mere	1	1.45	..	N.W.	Travelled 35 m. per hr.	..
"	Malvern	2	8	..	..	Heavy.	H. Terry
Northampton	Northampton ..	3.15?	..	..	..	Heavy squall 8.30.	G. Warren.
Cambridge ...	Cambridge	4.10	..	W.?	W.?	Very short squall from W.	T. E. Amyott
Norfolk	Diss .....	..	..	..	..	..	..
Pembroke....	St. Ann's Head?	12.25?	..	N.	N.	Hail squall.	J. C. Walker.
Gloucester ...	Cheltenham	2	..	..	..	Terrific, but short.	R. Tyrer, F.M.S.
Berks	Newbury	2.30	3.30	N.W.	N.	Hurricane for short time.	J. Ward.
"	Windsor	3.5?	..	..	..	Snowstorm with violent gusts.	..
Oxford	Oxford	2.15	3	..	..	..	..
Middlesex....	Camden Town ..	3.45	5.10	..	..	Gusts before snow.	G. J. Symons, F.M.S.
Surrey	Kew	3.50	..	W.	N.W.	Complicated currents.	..
"	Addiscombe	4.5	5.30	W. by S.	N.W.	26 m. between 4 and 5.15.	E. Mawley, F.M.S.
"	Dorking	4.15?	..	..	..	Tornado, followed by snow.	..
Kent	Greenwich	3.55	..	W.S.W.	N.N.W.	..	Sir G. B. Airy, F.R.S.
"	Tunbridge Wells	4.50?	..	..	N.W.	Sudden, violent and short.	C. L. Prince, F.M.S.
Cornwall	Falmouth	2.45	..	..	..	..	..
Devon	Torrington	2?	..	..	..	Slight fall of snow.	E. Bazely.
"	Tavistock?	4?	..	..	..	Wind and snow at 4 p.m.	W. Merrifield.
"	Teignmouth	3?	..	..	..	Squall of wind.	G. W. Ormerod.
"	Torquay	2.45	3.25	N.W.	N.N.W.	Squall, force 6.10 min.	E. E. Glyde, F.M.S.
Somerset	Porlock	1.30	2	..	..	Hurricane, sleet and rain.	..
Wilts	Compton Basset,	4.30?	..	..	..	..	J. Allen.
"	Calne? .....	..	..	..	..	..	..
"	Salisbury	3	..	..	N.N.W.	Wind very high.	..
Hants	Southampton ..	3	4	..	..	Heavy sleet and snow.	..
"	Hurst Light-house	3.15	4	..	N.N.W.	Terrific, for 15 or 20 minutes.	T. Lanceley.
Isle of Wight	Ventnor	8.40	..	..	N.N.W.	Sudden snow squall.	..
Isle of Jersey	St. Aubin's	5	N.	Short squalls, soft hail.	J. E. Vibert, M.C.P.

THE "EURYDICE" SQUALL

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WIND, WEATHER, AND CIRCUS, MARCH 24TH, 1978.



resting details in our pages through the courtesy of the author and Mr. G. J. Symons, whose aid in the preparation of the paper was of much value to the author.—*Ed. Nautical Magazine.*]

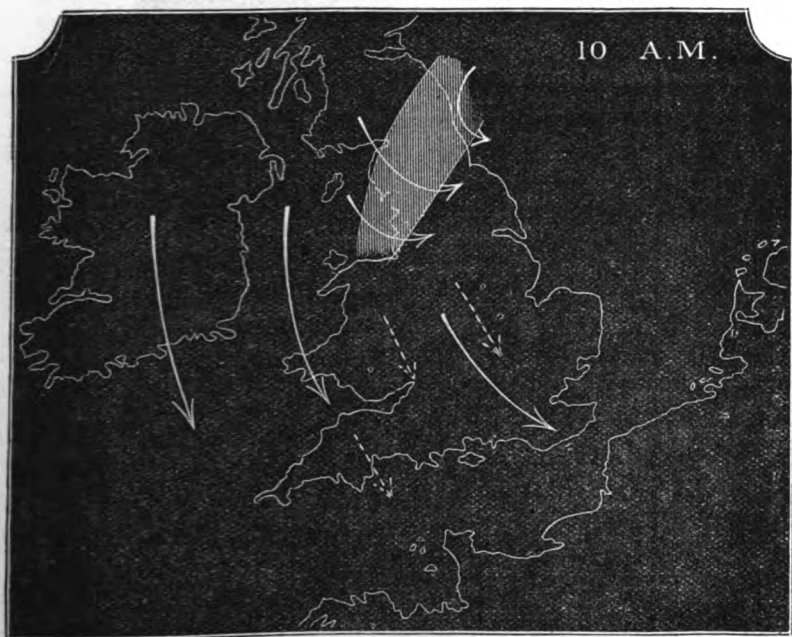
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Leicester	Melton Mowbray	1.30	Snow with squalls.	A. M. Rendell
"	Lutterworth	1.50	3	W.S.W.	N.N.W.	Hardest at 2.5.	W. C. Ley, F.M.S.
Hereford	Hereford	1	1.20?	..	N.W.	Hailstorm, strong squalls.	E. J. Isbell.
"	King's Capel, Ross	1?	1.20?	..	N.W.	Squall, hail and snow.	A. Ley.
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Worcester ..	Tedstone de la Mere	0.40?	1.30	..	N.N.W.	Violent.	F. S. Lea.
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Norfolk	Diss	4.10	..	W.?	W.?	Very short squall from W.	T. E. Amyott
Pembroke...	St. Ann's Head?	12.25?	..	N.	N.	Hail squall.	J. C. Walker.
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"	Tunbridge Wells	4.50?	N.W.	Sudden, violent and short.	G. L. Prince, F.M.S.
Cornwall	Falmouth	2.45
Devon	Torrington	2?	Slight fall of snow.	E. Bazely.
"	Tavistock?	4?	Wind and snow at 4 p.m.	W. Merrifield.
"	Teignmouth	3?	Squall of wind.	G. W. Ormerod.
"	Torquay	2.45	3.25	N.W.	N.N.W.	Squall, force 6.10 min.	E. E. Glyde, F.M.S.
Somerset	Porlock	1.30	2	Hurricane, sleet and rain.	..
Wilts	Compton Bassett, Calne?	4.30?	J. Allen.
"	Salisbury	3	N.N.W.	Wind very high.	..
Hants	Southampton ..	3	4	Heavy sleet and snow.	..
"	Hurst Light-house	3.15	4	..	N.N.W.	Terrific, for 15 or 20 minutes.	T. Lanceley.
Isle of Wight	Ventnor	3.40	N.N.W.	Sudden snow squall.	..
Isle of Jersey	St. Aubin's	5	N.	Short squalls, soft hail.	J. E. Vibert, M.C.P.

THE "EURYDICE" SQUALL

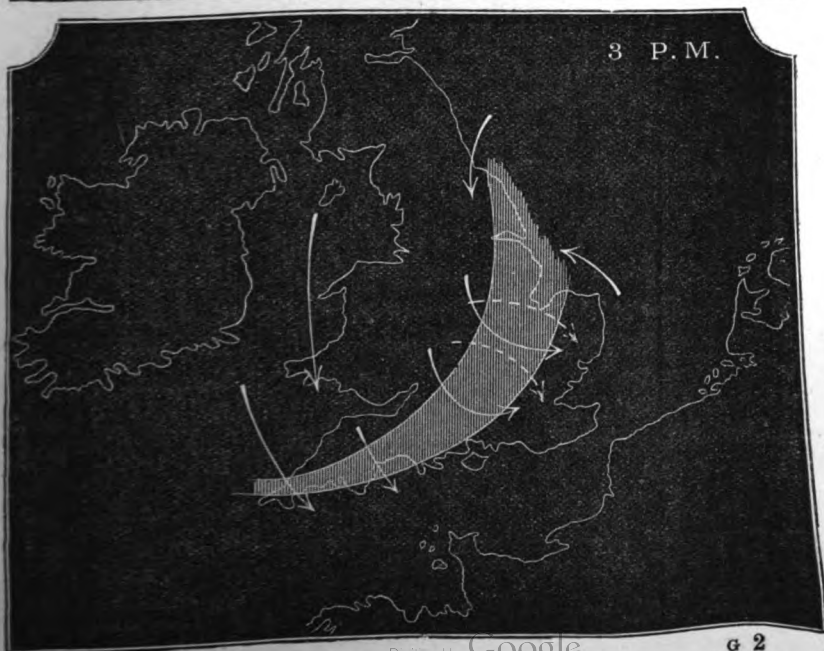
435

WIND, WEATHER, AND CIRRUS, MARCH 24TH, 1878.

10 A.M.



3 P.M.

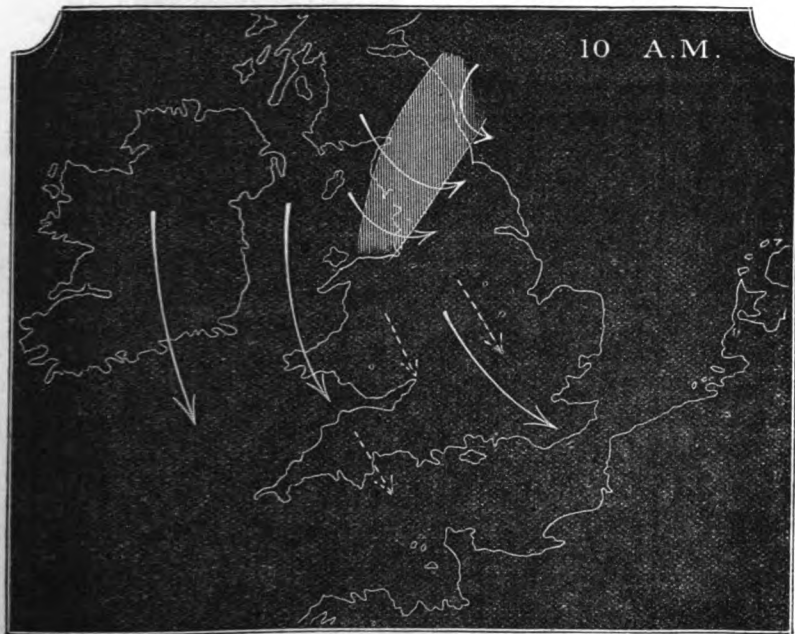


resting details in our pages through the courtesy of the author and Mr. G. J. Symons, whose aid in the preparation of the paper was of much value to the author.—*Ed. Nautical Magazine.*]

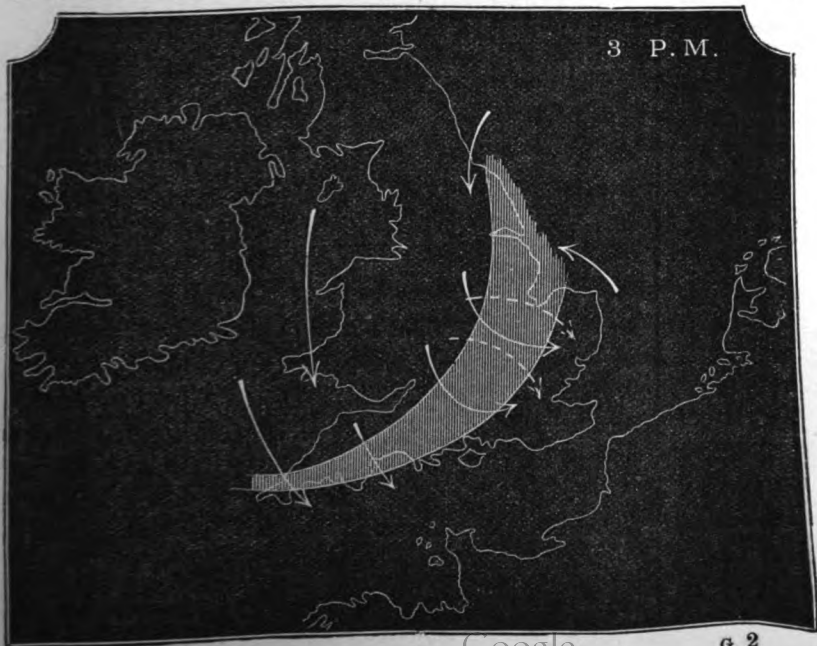
COUNTY.	STATION.	Snowstorm began.	Snowstorm ended.	Wind before Snowstorm.	Wind in Snowstorm.	REMARKS.	AUTHORITY.
Northumberland	North Shields ..	9.30	11.30	W.N.W.	N.N.E.	Gentle to fresh breeze.	A. S. Nicholson.
Westmorland	Copy Hill, Shap	11?	..	..	..	..	W. Hoggarth.
York	Bedale	10.20	..	S.W.	N.W.	Nimbus first in W., 10 a.m.	F. Stow, F.M.S.
"	Arnccliffe	10.15	0.0	..	..	Heavy snowfall.	W. Boyd.
"	Grassington	10.15	1.30	..	N.W.	Hurricane at 11 a.m.	S. Eddy.
"	Mines .....	..	..	..	..	..	..
"	Skipton	11?	..	W.	..	Gentle snow before squall.	"
Lancashire ..	Brindle, Chorley	10.25?	..	..	..	..	..
"	Stonyhurst	10	0.0	S.W. by S.	N.W.	Velocity 30 m., at 11 a.m.	S. J. Perry, F.R.S.
"	Liverpool	10	..	..	..	Severe snowstorm.	..
"	Manchester	10.40?	..	..	..	Snowstorm before noon	..
Lincoln	Killingholme,	1.30	5.30	..	..	Continuous snow.	J. Byron, F.M.S.
	Grimsby .....	..	..	..	..	..	..
Shropshire ..	Shrewsbury	0.0?	..	..	..	Violent at noon.	E. V. Pigott.
"	Ludlow	11.55?	..	..	..	From N. towards S.E.	..
Stafford	Stafford	0.0	..	..	..	Snowstorm.	..
Leicester	Melton Mowbray	1.30	..	..	..	Snow with squalls.	A. M. Rendell
"	Lutterworth	1.50	8	W.S.W.	N.N.W.	Hardest at 2.5.	W. C. Ley, F.M.S.
Hereford	Hereford	1	1.20?	..	N.W.	Hailstorm, strong squalls.	E. J. Isbell.
"	King's Capel,	1?	1.20?	..	N.W.	Squall, hail and snow.	A. Ley.
	Ross .....	..	..	..	..	..	..
"	Ross	1	1.45	W.N.W.	N.	Violent for short time.	H. Southall, F.M.S.
Worcester ..	Tedstone de la	0.40?	1.30	..	N.N.W.	Violent.	F. S. Lea.
	Mere .....	..	..	..	..	..	..
"	Malvern	1	1.45	..	N.W.	Travelled 35 m. per hr.	..
Northampton	Northampton ..	2	3	..	..	Heavy.	H. Terry
Cambridge ...	Cambridge	3.15?	..	..	..	Heavy squall 3.30.	G. Warren.
Norfolk	Diss	4.10	..	W.?	W.?	Very short squall from W.	T. E. Amyott
Pembroke...	St. Ann's Head?	12.25?	..	N.	N.	Hail squall.	J. C. Walker.
Gloucester ...	Cheltenham	2	..	..	..	Terrific, but short.	R. Tyrer, F.M.S.
Berks	Newbury	2.30	3.30	N.W.	N.	Hurricane for short time.	J. Ward.
"	Windsor	3.5?	..	..	..	Snowstorm with violent gusts.	..
Oxford	Oxford	2.15	3	..	..	..	..
Middlesex...	Camden Town ..	3.45	5.10	..	..	Gusts before snow.	G. J. Symons, F.M.S.
Surrey	Kew	3.50	..	W.	N.W.	Complicated currents.	..
"	Addiscombe ..	4.5	5.30	W. by S.	N.W.	26 m. between 4 and 5.15.	E. Mawley, F.M.S.
"	Dorking	4.15?	..	..	..	Tornado, followed by snow.	..
Kent	Greenwich	3.55	..	W.S.W.	N.N.W.	..	Sir G. B. Airy, F.R.S.
"	Tunbridge Wells	4.50?	N.W.	Sudden, violent and short.	C. L. Prince, F.M.S.
Cornwall	Falmouth	2.45
Devon	Torrington	2?	Slight fall of snow.	E. Bazely.
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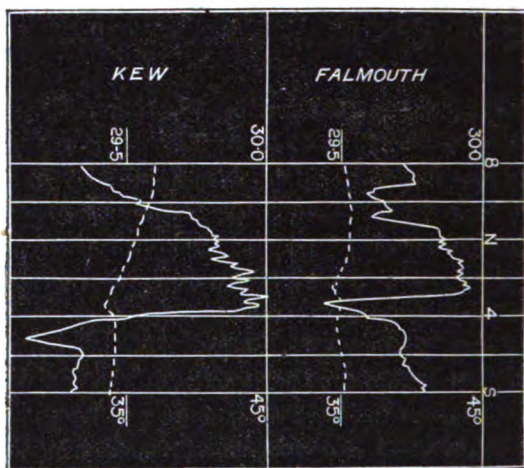
WIND, WEATHER, AND CIRRUS, MARCH 24TH, 1878.

10 A.M.



3 P.M.





OLD SEA LAWS.

IN the March number of the *Nautical Magazine*, in an article on "Shipping Legislation," it was said, ". . . Sea custom and sea service requirements are totally different from any other, and for the Legislature or anyone to assume that they are alike, or can be treated alike, is to assume untruth." * Seafaring readers will not require any great variety of testimony to convince them of the correctness of this assertion. Others, who may, will find excellent proof of its exact accordance with fact in the existence of the remarkable and long-established body of sea laws which either retain their vigour to the present day or form the foundation upon which the maritime jurisprudence of modern times is erected. Even where the provisions of the celebrated maritime codes of Ancient and Mediæval Europe have, in process of time and by change of circumstances become obsolete, there is still much to be found in them which is

* *Nautical Magazine*, Vol. XLVII., No. III., p. 206.

of historical importance in making any investigation into the rise and progress of that vast commerce which is now borne upon the waters of every sea. There is for every person, be his calling what it may, a special interest in learning something of the previous condition of the occupation which he follows; and many, to whom anything like antiquarian pursuits would be uncongenial or even unendurable, will own a sense of the spell which information concerning the past history of the duties which they are daily called on to perform is apt to cast over their imaginations. Some account of the old sea laws of our own and other European countries should prove interesting to the members of both the Royal and the Commercial Navies. From it both may be able to see how closely akin in former times were the occupations of each; the naval officer may discover the original foundations of the "Articles" and regulations under which he at present serves, and the Mercantile Marine officer may succeed in tracing the outlines of the profession to which he belongs at a period so remote, that but few others can carry their history back to it.

Maritime law, even amongst seafaring nations in the early stages of civilisation, must have formed, as it does still, an important branch of commercial jurisprudence. The history of it has a very respectable antiquity. We have purposely given to this article the title "*Old Sea Laws*," rather than "*Ancient*," the reasons for which shall be adduced at once. "*Ancient*," in the historical sense, has almost come to have the meaning of referring to those extinct nations and empires which had ceased to exist before the completion of the first three or four centuries of the Christian era.

"Ancient history," is an accepted convention for the history of such countries and peoples as Egypt, Assyria, the Phœnicians, the Romans. "Old," on the other hand, is often and conveniently referred to the early period of the history of modern or still existing nations. With ancient maritime laws, then, in this acceptation of the attribute, we shall have little to do in the present paper. The earliest system of maritime law which was formed into a distinct compilation, has left upon that still in force traces of its influence too marked to allow us to pass it by without

any reference ; but that reference shall be brief. Many of the Mediterranean States of antiquity had attained a position of much commercial and maritime importance ; and the fact that they had distinct bodies of sea laws for the guidance of those who gained their living on or by the sea—probable enough in itself—has been confirmed to us by the direct testimony of several authorities. Of these States none achieved greater distinction than the Rhodians, the memory of whose naval discipline and renown, as Cicero tells us, continued till his day. At the very dawn of history they had evinced a spirit of maritime enterprise which bore enduring fruit. They founded several colonies in Sicily, Southern Italy, and Asia, of which Parthenope, near the site of the modern Naples, was perhaps the most important. Subjected in turn by the Athenians, the Spartans, the Carians, and Alexander of Macedon, they at length succeeded in establishing an effectual independence ; and, that of the older States having declined, the supremacy of the seas passed into their hands. Eventually they submitted to Rome ; but in the meantime they had formulated the code of maritime law which was subsequently adopted into the Roman jurisprudence. An anecdote, on the authority of the jurist Ulpian, shows not only how great was the weight which the Rhodian law had, but also on how trifling a point great issues are sometimes made to depend. The Emperor Antoninus Pius, being called upon to decide a contested point with respect to a ship, said that, " Though he, indeed, was lord of the world, the law was of the sea," and ordered judgment to be given in accordance with the Rhodian rules. The Latin words used by him are capable of two interpretations—either that he was lord of the world and the law of the sea also, or that, though he was lord of the world, it was the law and not himself which was lord of the sea. During the heated controversy which raged about two centuries ago regarding the dominion of the sea, these two interpretations were cited in support of their case by both parties.

The city of Amalfi, in Southern Italy, celebrated as the place at which the mariner's compass is said to have been first used in Europe, and at which the Pandects—the digest of Roman law

drawn up by order of the Emperor Justinian—were discovered, long retained the honour of being the parent of the first code of modern maritime law. That credit has now been shown not to belong to it, and the code itself was not intended for the purpose at one time commonly assigned to it. Amalfi was not the only Mediterranean port which, after the break up of the Roman Empire, became distinguished for the extent to which its commerce and navigation were carried. Venice, Genoa, Marseilles, and Barcelona are names which will at once occur to many readers as those of famous commercial centres of former days. Other places, once of considerable celebrity, such as Wisby, Damme, Staveren, and Oléron, on the northern and western shores of Europe, have now faded into obscurity, from which their names are only rescued by the lasting pre-eminence given to them as associated with other, and in some respects still valid, maritime codes.

Amidst the general insecurity and the want of power of the law to assert its dominion over men during the dark ages, it is obvious that common convenience and the very necessities of life would compel people of different occupations to adopt a set of conventions, or generally accepted principles, by which they should be guided in their dealings with one another. These eventually assumed the force of laws. "The law of the sea," says Sir Travers Twiss, "has been from the earliest times exceptional to the law of the land." Even had the Governments of the States which arose in Europe on the ruins of the Roman dominion been sufficiently enlightened and established to legislate for their subjects, the very openness of the sea to all nations would of itself have prevented the legislation of any single authority from binding all those who sailed upon it. "A certain manner of acting towards one another on the part of seafaring men, when they met on the high seas, grew up into a custom, the origin of which is hidden in the darkness of a remote antiquity." Custom alone was too weak to enforce a concurrence in its dictates, and it manifestly failed to provide for new events arising subsequent to its adoption. In the absence of positive law, and in the failure of custom, the only plan open to mariners of settling maritime disputes was to appeal to the judgment of those who were expe-

rienced in the business and the usages of sea, who would decide in accordance with their experience of sea customs, or with the spirit of them. This led to the formation of maritime tribunals distinct from those which gave decisions in disputes arising on land. In the States and cities which sprang up in Southern Europe upon the shores of the Mediterranean, composed as they were in great measure of peoples amongst whom the language, civilisation, and some fragments of the national spirit of old Rome still lingered in a more or less perfect form, it is not surprising that the laws, originating as has been said, should retain deep marks of the influence of the Roman jurisprudence. On the northern coasts of the Continent, where the Roman law had scarcely penetrated, and where, when it had, all traces of it were soon obliterated, the system of maritime jurisprudence developed was naturally more original. Thus there were two great divisions of that law of the sea under the shelter of which the commerce of the world has grown up. Of course the points of similarity between them are numerous, but where they differ it will be in general found to be from the cause just stated. The town of Wisby, in Gottland, a place of which we now hear little, gave its name to a code of laws which claimed to be the oldest of all. That claim has been refuted; but it is no small proof of the commercial eminence enjoyed in former ages by that seaport, that there is scarcely a collection of sea laws extant which does not contain the Wisby code, or at least makes reference to its existence. The better known laws of Oléron have been compared by a distinguished writer of the last century with those of Wisby, and of both it is said that "they had an authority almost equal to the Rhodian laws"—the one in the Baltic and the other in the Atlantic ports.

Maritime law being based chiefly upon sea customs and its expression being deeply tinged with nautical phrases and words, was long administered by those only who were practically acquainted with the sea and its usages. In the early ages of most European States, education being practically monopolised by the clergy, clerks in orders only were competent to decide the law which depended greatly upon written statutes and decisions. In the

majority of courts, judges and pleaders were churchmen. In the Maritime Courts it was not so, the clergy having little practical knowledge of the sea, at least before the habits of making voyages on that element had become common during the later crusades. Thus the law maritime long remained unwritten, and even when reduced to writing its phraseology had a special character of its own. The necessity of having at hand a written record of decisions to which reference might be made when experts in sea customs were absent, was experienced at an early period. Thus in a compilation of laws published but a few years after the date usually assigned to the Norman Conquest, which purported to be but a republication of a more ancient code, those relating to maritime affairs have a place. Once reduced to writing, the employment of the scribe and of the scholar became indispensable in the courts whose decisions were bound by these laws. But the value of expert testimony, or experts' advice, continued to be realised; and at the present day we see a faint reflection of the old methods of constituting a Marine Court in the practice of joining with the *juris-consult* on the bench a certain number of seamen as nautical assessors.

There has been much dispute as to the superiority in antiquity of several compilations of sea laws which have survived to our own time in a more or less perfect form. The recent publication of that interesting monument of old jurisprudence, the Black Book of the Admiralty, has been the means of throwing a flood of light upon the dark corners of this branch of legal history. To each of the three volumes which have been published, the editor, Sir Travers Twiss, has prefixed an introduction remarkable for the learning displayed in it, and the interest with which he has invested a subject often, but too justly, esteemed a dry one. The claims of each code to priority in point of age have been investigated by him with eminent patience and erudition; and the rank which he assigns to each may be taken as fixed upon a foundation from which it will not be easy to displace it.

As in so many other departments of European civilization, so in that of modern maritime law, we must look for an origin in the neighbourhood of the Mediterranean. The town of Trani, on the shores of the Adriatic, is said to be the place at which were drawn

up the oldest set of decisions in maritime law now extant. The date given to them, and to which they appear justly entitled, is the year 1063, or three years earlier than that given to the Norman conquest of England. These "ordinances," as they are called, were compiled after due deliberation by the Consuls of the Corporation of Navigators of Trani, "as being the best instructed persons in maritime matters who could be found in the Adriatic Gulf." We have seen enough, even within the last few years, to know that the paths of commerce are often changed. The opening of the Suez Canal, less than ten years ago, has afforded a new route to the greater part of the vast trade with the East. The construction of a railway, within local limits, frequently turns traffic in a different direction. So that there is little reason for surprise that Trani, like Damme, or Wisby, which once gave their names to a body of laws, as being foremost amongst the commercial cities of the time, has now almost slipped out of recognition. At the remote date which we have mentioned above, there is good evidence that it was a place of very considerable trade. The decisions of Trani, though drawn up in an Italian port, were in many points free from the influence of the Roman jurisprudence. Thus they accentuate the fact that the increasing commerce of the epoch could no longer be confined by the legal limits found sufficient for the trade of ancient times. They mark the beginning of the modern period. And in no respect are they more interesting to seamen than in that wherein they show that under the system which they expounded the mariner was a free man. "The slave no longer figures as a chattel which may be thrown overboard to lighten the ship. The crew are free men." Therefore, even in the South of Europe, the dignity of the mariner's calling was acknowledged to be immensely raised. In our own neighbourhood, where the founders of kingdoms and royal dynasties were often seafaring freebooters, and where the freeman boasted that honour and distinction were best gained upon the sea, no such change was required. But one which put all seafaring folk of whatever land upon an equal footing of freedom tended greatly to elevate their mode of life even in the eyes of those who did not adopt it. We see from this that the decisions of Trani have an

interest to the seaman apart from their mere antiquity. We may also see from many other details how the principles guiding them have been transmitted to other codes. When a ship was stranded, it was decreed that the crew should remain by her, to save the equipments, at least eight days, and that then they might leave her. A mariner could only quit the service of the ship during her voyage under certain circumstances and on forfeiting half his wages. The master might not strike one of his crew, and the latter might defend himself if the master pursued him and persisted in striking him. When pursued, the foremast hand might go forward to a certain part of the ship, and, if the master followed him beyond it, he might use force in his own defence. A reminder of the conditions of Mediterranean navigation, then and for centuries after, is seen in the provision that the master may pledge the value of his vessel to ransom her from corsairs.

Next in antiquity of date, and superior probably in renown and importance, is the body of sea laws called the Judgments of Oléron. The island of Oléron is situated a short distance from the coast of the French Department of the Charente Inférieure, from which it is in parts separated by only a narrow strait. Its proximity to the mouth of the Garonne and to Rochefort, and its position on the shores of the Bay of Biscay, gave it an importance in commercial history which could hardly fail to be enjoyed by a place lying in the track of the important trade carried on between Bourdeaux and the channel ports. The province of Saintonge, to which it belonged, formed a part of the Duchy of Aquitaine, which was so important a portion of the Continental dominions of the Plantagenet family of English kings, to whom it had come by marriage in addition to the other dominions of their Angevin progenitor. It was for a long time believed that the collection of laws above-named was made and promulgated in the Isle of Oléron by Richard Cœur-de-Lion on his way home from the Holy Land. That this should have been thought historically correct, and should even have been adduced in argument by some of our most learned men, is certainly very remarkable when we reflect how well known is the romantic story of King Richard's captivity and ransom. Every young English scholar for ages past has learned of the

treacherous imprisonment of the lion-hearted king by the Duke of Austria when he was making a way back from Palestine across the continent of Europe by a route lying far from the Bay of Biscay and its shores. The belief now is that these laws were compiled in the island in Richard's time, and that they received the Royal Assent after his return to England from the Crusades.

They fixed in a definite form many of those older decisions and customary laws which had been in existence for generations before the time of Richard I., amongst the seafaring folk of Northern and Western Europe. In an old book on sea laws, published in Queen Anne's reign, the writer says of these laws, "though they were published there, they did not only take place in that island and the adjacent countries, but likewise in all the seas and maritime places in this part of the world." Originally written in the French of the time, much mixed with the dialect of the neighbouring Gascony, they have several times been translated into English. Some of the translations are of an early period, and the quaintness of their language adds much to quaintness of the spirit which is breathed in these old documents. We often hear regrets expressed at the imperfect discipline in the Merchant Service of the present day, but the most weak-minded commander would hardly like to be bound by the following rule:—

"A ship is lyeng in a haven and taryeth for the freyghte and tyme to departe, the mayster ought to take counsell with his felowes and saye, mates, howe lyke ye this wether? Some wyll saye, it is not good, lete it over passe. Others will saye, the wether is good and fayre. The mayster ought to agre to the most, or els if the shyp perysh he is bound to restore the value as it is praysed, yf he have wherwith."

The question of leave to go on shore at places touched at during the voyage was settled in this article:—

"If a ship departe fro any place laden or not, and aryveth at another place the maryners ought not to go out without leve of the mayster, for yf the shyp shuld perysshe or hurt by any aventure, they be holden to make amendes. But if the shyp were in a place where it were ankered with two or thre cables they may well go out without the maysters leve, levynge some of the

mariners to kepe the shyppe and goodes, and they to come betyme to the shyppe, and yf they tary longe they ought to make amendes yf they have wherwith."

This is probably the origin of that system of punishing absence, "breaking leave" as it is called, by fines consisting of a portion of the offender's pay stopped, introduced some years ago into the Royal Navy. The care of sick seamen, when away from home, is provided for also :—

"If it chaunce that any maryner is taken with sekenesse in the shyp doing service thereto belongyng, the maister ought to set him out of the shyp, and seke lodgyng for hym, and ought to find hym light, as talowe or candell, and to give hym a lad of the shyp for to take hede of hym, or hyre a woman to kepe hym, &c."

Punishments for breaches of order or discipline took the form of fines :—

"A mayster hyreth his maryners and ought to kepe them pesably, and offre to be theyr juge, and yf any say that hys felow lyeth, havynge brede and drynke at the table [apparently a round-about way of expressing a messmate], he ought to pay four pence; and if any belyeth the maister, to pay eight pence."

The master himself is equally under the law, as, if he "belye any, he also to pay eight pence." And further on we find that, "yf the mayster smyte any of the maryners, the maryner ought to abyde the fyrste buffete, be it with fyst or flat with his hande, but yf he smyte any more he may defend him; and if a maryner smyte the mayster, to pay five shillings or to lose his fyst."

The chief trade from the Garonne in the twelfth and thirteenth centuries, as it is probably in the nineteenth, was the export of that wine which has made Bordeaux so famous. So we frequently find in the laws allusions to the practice of loading ships with wine. In one case "it is ordained and established for a custom of the sea that yf a marchaunt load wyne in a shyp, he may load the hulle as full as the master could do with barrells without the mayster or any body else putting any on board or raising any hinderance." And in another place, "it is ordained for a custom of the sea that yf a marchaunt freyghte a shyp and load it with wyne, it seemeth to the maryners that the marchaunt ought of ryght to give them in

each place where they arrive, and on each day of a double feaste, a pot of wyne or two or three pots." The ordinance is, however, not to be construed too strictly, as the next sentence makes it known that, "the maryners by right of lawe cannot have or demand any thing, but the marchaunt may gyve them in courtoisie what he pleaseth."

The position of the "lodeman," the name given to the pilot, was formerly one of responsibility and danger, even greater than in our own days: This is proved by the following extracts:—

"A lodeman undertaketh to lede a shyp to any port, and it happens that he fayle, and the shyp perysshe, he is bounde to restore the damages as well to the owner of the shyp as to the marchauntes."

But this penalty is insignificant compared with the next mentioned:—

"It is established for a custom of the sea that yf a shyp is lost by defaulte of the lodeman, the maryners may, if they please, bring the lodeman to the windlass, or any other place, and cut off his head, withoute the maryners being bounde to answer before any judge."

This is a species of Lynch law which we may well be glad has disappeared from the maritime jurisprudence of modern times.

The seaports of the Spanish Peninsula have long enjoyed great eminence amongst commercial cities, and one of them, Barcelona, is still among the most flourishing places of trade in South Western Europe. An old body of sea laws usually spoken of as the Consulate of the Sea, was drawn up at least four centuries ago at that place. It is a "collection of customs of the sea which had the force of law in the Consular Court at Barcelona." This digest is believed to have been formed of the decisions of those men experienced in seafaring life who were called in to give judgment in disputes arising concerning ships and sea business generally. The Consulate speaks of them as "wise men who have navigated the world." The three codes, compilations, or digests mentioned, viz., those of Trani, Oléron, and the Consulate of Barcelona, form the basis on which has been raised the superstructure of modern maritime law. This great edifice has of

course been improved and extended in accordance with the increasing requirements of modern times, but the essential features of its original foundations remain unaltered.

The laws of Wisby, though less ancient and even more practically obsolete than those just alluded to, still demand some mention. They were the rules which governed the conduct of the hardy seamen of the Baltic nations, with whom we ourselves claim a by no means remote blood-relationship. Wisby, says the old book of Queen Anne's time above quoted, "was once famous for trade above all the cities of the North," and many instances are given of the magnificence and splendour once belonging to it, which have now disappeared or left traces only in the still existing ruins. "'Twas in this city of Wisby that the sea laws and ordinances which the Swedes brought into credit were composed; they were received as righteous and just, and are kept in the Teutonic language till now." They resemble in many particulars the older compilations from which they have been borrowed, and a few of their provisions will show how little they differ from the other codes. Thus, Article IV. says:—

"No mariner shall lie or stay a night ashore without the master's leave, on pain of forfeiting two *deniers*; nor shall he unmoor the ship's boat in the night under the same penalty."

The custom of consulting with the crew as to the propriety of sailing in doubtful weather was in force in the Baltic, as we have seen it was in the Bay of Biscay, for Art. XIV. declares that—

"The master being in port ought not to depart or set sail without the advice and consent of the major part of the mariners."

Many interesting details might be culled from these antiquated records of the views and opinions of the seamen of old; and we believe that many of their successors of the present day would find both pleasure and instruction in looking over them, and comparing the condition of their calling now with what it was at the distant period when the necessity for compiling these codes arose.

IS IT PEACE ?

WE have abstained from inserting in our pages any articles or even any remarks on the cruel war that for many months ravaged the fairest provinces of south-eastern Europe, and whose victims and victors have since carried and spread throughout the home of the peasant desolation and death by fever. The *Nautical* has never "taken sides" in the war, for the reason that the Mercantile Marine of Britain is the Mercantile Marine of a neutral power; and it is the duty of a journal like ours, whose privilege it is to a great extent to lead thought in matters maritime, to set an example of the duties of a neutral in the most effective manner, and this we have done by entire abstention.

The question has now, however, assumed a wider range, and is one that ought to be discussed. It is no longer a question between two parties to an unnecessary and disastrous quarrel, but is one for the whole of Europe. No body of persons should discuss this question more freely and thoroughly than those interested in ships and in goods carried in ships.

It is now of no moment whether Russia was right or Turkey was right. Turkey has been beaten—that is enough. It is equally of no moment now whether the Emperor of all the Russias—the holy figure of the North—was or was not, as he assumed he was, deputed by the Almighty to impart the blessings of Christianity to Turkey; nor whether the war was conceived and conducted solely in that view, and has effected that and nothing besides or instead of it. We shall all of us know whether this be so when the account is finally settled.

There are in England many men, good, thoughtful, and even patriotic, who can discover nothing in the motives, action, or terms of the Victor, inconsistent with Christian grace, pure singleness of heart, and thorough unselfishness. There are many men who can. Whether those who cannot, or those who can are right we do not venture to assert. It is of little moment which of the two versions is accurate, for the point we have now to consider is

above and far beyond the question whether Russia and Russian diplomacy is or is not a model of virtue, purity, freedom, and singleness of heart. It is, "shall Treaties henceforth have any binding value."

In this country there is not a party calling itself a "War party;" but there is a party calling itself the "Peace party." The aim and object of the peace party is to avoid war, but there is not even in the ranks of the peace party itself, a man who advocates "peace at any price." The whole difference of opinion between the peacefulest of the peace party, and the most warlike of the so-called war party, is one of degree, for neither would go to war unnecessarily, and neither would countenance a gratuitous breaking of peace. The peacefulest of the peaceful would defend himself, or his mother, or his wife, or his family, or his house if attacked. He would meet violent acts of onslaught by acts of vigorous self defence; the most warlike would do no more when attacked; the only question would be as to the amount of vigour that ought to be exerted to constitute efficient defence, and the amount of chastisement necessary to punish the aggressor, and to suffice as a warning to other aggressors; but all this would be in the interests of peace.

The whole of England is a peace party, for there is not a soul amongst us who would break the peace of Europe. It is not breaking the peace to attempt to bring to book a power who has already broken it, or who declines to be bound by the solemn obligations of a treaty.

As far, however, as it is possible for us to see ahead there is as yet no necessity even for our country to play the part of European policeman, and to attempt to take into custody and punish the most notorious peace breaker of modern times. We, of course, refer to Russia, and we do not think that any one can say she is not a peace breaker. All that her most ardent admirers can assert is that she was justified in breaking the peace. That, however, is not the question for to-day; if it were, another question would follow, viz., what then would be a justification for England breaking the peace?

But to resume. The question is, "are Treaties to have any binding effect?"

It has been the dream of poets, and it has been equally the view of the so-called peace party, that armies and navies should be done away with, and that national and international disputes should be referred to arbitration. Put into plainer words and into common sense this means that treaties and congresses should take the place of battles. The very essence of the peace party view is that a compact should be formed amongst civilised nations which should be binding on every nation who is a party to it. Now it does so happen as a fact that such a treaty, such an international pact, such a bond of brotherhood does exist ; that the idol of the peace party, that is to say Russia, is one of the countries bound by that pact of brotherhood ; and that she is the only one, who, having broken the peace, now apparently endeavours to regard the treaty as waste paper, and her plighted word and honour solemnly given to other powers by that treaty, as of no binding force whatever, as of no value.

We use the word " apparently " because we think that there is no real desire on her part to do so, but she may now have some difficulty in submitting off-hand to a Conference, for the reason that her Government look with fear on the effect that any sudden alteration in policy would have on her people. It is possible, and, more than that, we believe it to be a fact, that many well informed persons in Russia look with grave apprehension on the prospect of a prolonged struggle ; and on opposition to a full discussion and settlement in Conference. But the Emperor is in a very difficult position. He is the head of the Church as well as the head of the Army, and dares not imperil his position by offending either. Both regard themselves as invincible and infallible. We think the Czar deserves every consideration and sympathy. He cannot, in the face of a victorious army and an aggressive and intolerant priesthood, snatch from both the chances of promotion and extension they have won ; and thus it no doubt is, that he cannot enter into Conference until he can satisfy his people that it is the least of all possible evils. That the Conference will come we feel sure. That it is the least of evils no one can doubt who is not infatuated ; and one reason why we think there are still solid hopes for peace is, that this view must in the end prevail even in Russia.

Can Great Britain as a leading European State look on quietly and tolerate a disregard of treaties? We should have thought not. It is against British interests, which include civil and religious liberty and peace. And if the views of the peace party are that treaties shall be observed and thus obviate war, and that a Council of Nations shall exercise judgment when a question arises that may end in war unless such a Council assembles, it would appear to be pre-eminently against the views of that party to admit that any one power who is signatory to a treaty can be absolved from the binding power of that treaty without the concurrence of the other parties to it, or should be deemed to be in the right in declining to submit to a Council of Nations.

The British Empire, and indeed all the European powers, are under a deep debt of gratitude to Lord Salisbury for placing the issue, stripped of all sentiment and nonsense, clearly before the world. We need not say that it is not to the interest of Great Britain in a selfish sense, but to the interest of Great Britain, in common with all the nations of Europe in a collective and wide sense, that treaties should be kept, and if the other powers of Europe attach the same value to treaties as Great Britain does, the nations will, by upholding them, rest in peace for many generations.

Whether the best way to secure peace is to be in a position to make the voice of the most peaceful country heard in the European Concert, is a question on which there may be difference of opinion; but it may be that the six millions and the additional millions spent on placing our Army and Navy in a position to meet emergencies, is an expenditure not in the interests of war, but in the interests of an enduring and lasting peace; at any rate it is intended to contribute to the upholding of treaties, and in the words of Longfellow, is a sum spent "to redeem the human mind from error," when that human mind is so erroneous as to think that treaties are not binding.

The poet Longfellow seems to have had in his mind very much what Lord Salisbury is contending for (that is to say, a settlement of International disputes by a Council of Nations), when he wrote the following words:—

“ Were half the power, that fills the world with terror,
 Were half the wealth, bestowed on camps and courts,
 Given to redeem the human mind from error,
 There were no need of Arsenals or Forts.

“ The warrior’s name would be a name abhorred !
 And every nation, that should lift again
 It’s hand against it’s brother, on its forehead
 Would wear for evermore the curse of Cain !

“ Down the dark future, through long generations,
 The echoing sounds grow fainter and then cease ;
 And like a bell, with solemn, sweet vibrations,
 I hear once more the voice of Christ say, ‘ Peace.’

“ ‘ Peace ; ’ and no longer from its brazen portals,
 The blast of War’s great organ shakes the skies,
 But beautiful as songs of the immortals,
 The holy melodies of love arise.”

THE CONTAGIOUS DISEASES ACTS.



N the 22nd May Sir Harcourt Johnstone, the Liberal member for Scarborough, will move the second reading of his Bill for the Repeal of the Contagious Diseases Acts. This will be the fifth occasion on which these Acts have been brought before the House of Commons on a motion for their repeal (the first being in 1870), and the third time that the honourable baronet has appeared on behalf of their opponents. On each of the four previous occasions the motion for repeal has been defeated by an overwhelming majority, and there can be no doubt that a similar fate awaits the second reading of Sir H. Johnstone’s Bill on the 22nd inst., if indeed it escapes the dangers of the “ previous question ” or being “ talked out.” It is, therefore, quite unnecessary to defend these Acts, which must be judged by their results, to which we shall presently refer. Our present object is to bring before the readers of the *Nautical Magazine* a few facts and figures which, being mostly gathered from official sources, may be implicitly relied upon, and will be easily understood. These will enable us to decide a very practical ques-

tion, which has been frequently raised, viz., "Ought the Contagious Diseases Acts to be extended to all our large mercantile seaports?" If this question can be answered in the affirmative it must go very far to lay at rest, once and for all, the question of repealing the Acts.

A Parliamentary paper was published last year giving returns of the amount of venereal disease contracted by the crews of her Majesty's ships and vessels of war stationed at five Home ports at which the Contagious Diseases Acts have been and are in operation, and also at five Home ports where the Acts have never been in operation. This return was called for by Sir H. Johnstone, who probably expected a very different result from that which is given. The ten Home ports are as follows :—

Under the Acts.

Dartmouth.

Plymouth.

Portsmouth.

Queenstown.

Southampton.

Not under the Acts.

Greenock.

Hull.

Kingstown.

Leith.

Liverpool.

The results are briefly these. That the ratio of syphilitic diseases (the more severe of venereal diseases) is in ports not under the Acts double that of what it is in ports under the Acts. To put the matter in another way: the crews of war ships stationed in Greenock, Hull, Kingstown, Leith and Liverpool are twice as liable to contract syphilitic diseases as when stationed in Dartmouth, Plymouth, Portsmouth, Queenstown and Southampton. With regard to gonorrhœa (the lesser form of venereal disease), the returns are not so favourable, but as is stated in a note at the end of the returns, "the apparent increase of gonorrhœa which, it may be remarked, has taken place at all the stations, whether under the Acts or not under the Acts, may be attributed to the greater number of cases of gonorrhœa recorded rather than to any real increase of disease." These facts are very repugnant reading, and our apology for laying them before our readers must be their practical importance. If such a state of things exists amongst our naval seamen, who are subject to many restrictions in the matter of "leave ashore," what must be the condition of our merchant

seamen, who are free to do as they please after they have been paid off, and until they are fairly on board again? This question, unfortunately, cannot be answered with any approach to accuracy, though most of those who will read this will know well that venereal diseases are the cause of a large proportion of the invaliding among merchant seamen, besides causing an amount of suffering revolting to humanity. We will now give a few details respecting the five Home ports mentioned above as not being under the Acts, taking first the largest and therefore the one most well known, viz., Liverpool. In the *Nautical Magazine* for April, allusion was made to the Liverpool Seamen's Dispensary for Venereal Diseases which was opened on the 26th February, 1877, little more than a year ago. During the interval which elapsed from that date till the 31st December last, 847 different patients, all seamen, and, with the exception of about 25 cases, all suffering from venereal diseases, had received advice and medicine. The attendances were 2,368, or an average of 2.79 each patient. Of the above number of patients, 167 (nearly one-fifth) suffered from syphilis, while of the remainder many were cases of great severity. We have heard from the medical officers accounts almost horrifying of the sufferings endured by seamen from going to sea in an unseaworthy state. Patients have described shipmates as crawling about the decks in agony, unwilling, for obvious reasons, to report themselves to the captain, and yet unable to discharge their duties properly. One patient who was going to sea on the following day, when asked as to how he would manage to go aloft, replied, "Oh, I must shirk that somehow." But it did not seem to occur to him how unfair this shirking was to his shipmates, his officers, and his owners. One of the medical officers forwarded the following to the *British Medical Journal*:—

"As the condition in which a great many sailors proceed to sea may not be generally known to your readers, I should like to state a few facts as having come under my own observation within the last few months at the Liverpool Dispensary for Seamen. Out of a large number of sailors who apply there for treatment, I am sorry to say that a great many proceed to sea in a shocking state of disease. To give an idea I quote the following facts as having occurred within the last month:—

"Case 1 applied for advice on November 24th, suffering from acute phimosis, purulent discharge underneath the prepuce, and indurated glands of both groins. This man proceeded to sea on the 28th November.

"Case 2 applied for advice on November 27th, suffering from six ulcers of the corona glandis. He also proceeded to sea on November 28. (Cases 1 and 2 were shipmates.)

"Case 3 applied for advice on December 1st, suffering from a well-marked indurated sore of the size of a sixpenny piece, situated on the under surface of the prepuce, having all the appearances of the 'parchment induration,' described by Ricord, accompanied by indurated glands in the left groin. This case only remained under treatment until December 13th, as he went to sea on the following day. This was very mortifying to me, as the disease was beginning to yield to treatment.

"Case 4 applied for advice on December 4th, suffering from a copious papular syphilitic eruption and sore throat. On the following day he also sailed.

"I may mention that these four sailors' ships were unprovided with a surgeon."

Dr. Patterson, Surgeon to the British Seamen's Hospital, Constantinople, gives the following description of a visit he paid :—

"I visited a small screw steamer a short time since at the request of the captain, to examine his crew. I found the steward with two large suppurating buboes of six weeks' standing. The condition of the wounds and the dressings were perfectly filthy and stinking. The cook was covered with secondary syphilitic eruption and ulcerated sore throat. Two men had large syphilitic ulcerations, one with gonorrhoea. Now every man was as dirty as he well could be. All had shipped with the disease on them, and carefully concealed their state from the captain. Of course they performed their duties imperfectly, and the others of the crew as a consequence were overworked. This is only one of numerous instances of a similar character. Men are daily admitted into hospital suffering from various forms of syphilis, most frequently chronic, and in such a state of disease and dirt that anything communicable must be communicated."

Now, when we consider the close, ill-ventilated condition of many of the forecastles and deck-houses of ships, even of the present day, it will be seen how dangerous as well as unpleasant such cases must be. Much more might be added with regard to Liverpool, but sufficient has been said to prove how much disease prevails there, and we pass on to Hull. In 1870, the surgeon of H.M. ship *Audacious* described the lower parts of the town as a

filthy focus of foul prostitutes—reckless and degraded seamen. The Chief Constable of Hull, in his latest report, describes the great majority of prostitutes in Hull as living in disorderly houses, frequented by the lower orders. Greenock, Kingstown, and Leith are placed under circumstances somewhat peculiar, which makes their cases different from Liverpool and Hull. Greenock is within easy distance of Glasgow, and there is constant communication between the two both by land and water. Kingstown and Leith are each close to a large city, the former to Dublin and the latter to Edinburgh. In all these cities are to be found a large number of prostitutes of a very low and most degraded class. The Lock hospital accommodation also is very inadequate, and a great reflection on the boasted humanity of this country. Glasgow and Dublin have each from 70 to 80 beds available for females suffering from venereal diseases; Liverpool 25. Hull, Greenock, and Kingstown possess no Lock hospital, but a few cases are received into the local general hospital. In Leith, however, there is no provision whatever for the reception of cases of this disease, and the accommodation in Edinburgh is 16 beds.

The condition, also, of the lower class of prostitutes in our large seaports is another sad reproach to a Christian country. Entrapped into a vicious career by the false glare which surrounds the modern harlot's progress, many unhappy girls descend lower and lower in their career until they become the drunken, riotous creatures who surround our seamen's homes and prey upon our sailors to their great physical and moral ruin. Many of these women might no doubt be saved by a wise and judicious police system, such as we shall presently see is in force in some seaports, instead of the wretchedly inadequate efforts of the so-called Rescue Societies, Reformatories, &c. These women, it must be remembered, are but the refuse of our female population, but, for obvious reasons, the finest, in a physical sense, that the country possesses. But for our pretended ignorance of the "social evil" and sham parade of voluntary Lock hospitals, refuges, &c., many of these unfortunates might have been happy wives and mothers, spared many bitter sufferings, and saved from being the cause of sufferings no less bitter to others.

It is refreshing to turn from this dark picture to the brighter one presented by those ports we have named as under the protection of the Contagious Diseases Acts. Here we find what can be and has been done by wise legislation. The Act of 1864 was permissive in its character, and failed to effect the good which might have been done, as may be judged, when we find that out of 1,661 examinations made, 1,103 were of women found to be diseased. Since the Act of 1866 became law every woman in the ports of Dartmouth, Plymouth, Portsmouth, Queenstown, and Southampton, who is known by the special police to be a common prostitute, is required to undergo a medical examination every fortnight. If found diseased she is required to go to the hospital, and is detained there until she is cured. If she wishes to return home to her friends she is sent home free of expense to herself; or, if she wishes to enter a penitentiary, every facility is afforded her to do so.

The results of these wise and humane regulations have been most beneficial. We have already seen how greatly disease has been reduced among naval seamen; still more striking has been the reduction of disease among the unfortunate women themselves. Thus, in Portsmouth, the ratio of cases of disease in examinations made by the surgeon has fallen from 71·45 to 6·13. In the Devonport district, which includes Dartmouth and Plymouth, the ratio has fallen from 96·91 to 5·88. In Southampton, it has fallen from 12·08 to 4·93. In other words, while at the commencement of the examinations nearly all the women were found diseased, now the diseased women are the exception, those free from disease the general rule.

The numbers too of prostitutes has undergone considerable reduction. Thus in 1865 and 1877 the numbers were:—

		1865.		1877.
Portsmouth	... ..	1,355	... ..	532
Devonport	... ..	1,770	... ..	409

In Southampton the Act was not put in force till 1870, at which date there were 154 prostitutes known to the police; now the number is 98. The returns from Queenstown are published separately and are not to hand, but it is well known that the Acts

have effected a most remarkable improvement in the appearance both of Cork and Queenstown as regards the "social evil."

The Lock hospital accommodation provided by the Government in these districts is as follows :—

					No. of Beds.
Devonport	...	...	...	...	162
Portsmouth	}	...	...	...	120
Southampton					
Queenstown	...	...	...	...	46
Total ...					928

Not the least gratifying fact is the power possessed by these Acts of acting as a salutary deterrent to young girls and women who are on the border-land of prostitution. Within the last five years, and in the districts of Portsmouth, Devonport, and Southampton, no fewer than 742 girls and women who had been found in improper places and bad company were induced to return to their friends.

Many more details might be given of the value of these Acts which have been subject to such bitter opposition. But space compels us to be brief. That the adoption of the Contagious Diseases Acts by the Board of Trade, or the municipal authorities in our large seaports would be attended with most beneficial results must be patent to all who have carefully studied the matter. But to disarm opposition and place the matter in a clear light before the Government and the public, we would urge that opportunity should be taken at the coming debate of urging strongly on the Home Secretary and President of the Board of Trade, the desirability of appointing a Royal Commission to inquire into the following matters :—

(1.) The prevalence of venereal diseases in our large seaports, among merchant seamen.

(2.) The condition of prostitutes in the same seaports, and especially as to the prevalence among them of venereal disease.

(3.) The provision made in local hospitals for the reception of cases of venereal disease in both sexes.

(4.) And to suggest means to diminish the evils of prostitution and venereal disease.

In addition to the five ports, Greenock, Hull, Kingstown, Leith, and Liverpool, we would add Bristol, Cardiff, Belfast and Newcastle-on-Tyne, as places where inquiry should be made, and evidence taken on the spot. The time is opportune, and every effort should be made to secure this greatly-needed inquiry.

CORRESPONDENCE.

THE OLD BOWSPRIT LIGHT.

To the Editor of the "Nautical Magazine."

SIR,—There is often much good in old things. In this view I would call the attention of your readers to the loss the Mercantile Marine has suffered in the discontinuance of the old bowsprit light. No one can doubt that the present coloured side-lights of sailing ships and white masthead-lights of steamships are a vast improvement on that solitary light; but what I wish to submit for your own consideration, and for the remarks of your readers, is that these modern lights ought to be in addition to and not instead of the old bowsprit light, and I venture to say that if that light had not been disestablished there would have been no excuse for half the collisions that have since happened. It may, and will, of course, be said that many ships cannot carry a bowsprit light, some because they have no bowsprit, and some because the ships are too small, but there is nothing in these objections, and for the reason that some of these ships which have not bowsprits could carry the light on the stem, and the present system of side-lights might be objected to, with equal force, on the latter ground, as some sailing-ships cannot carry them. Instead, however, of that fact preventing large ships from carrying them, a provision is inserted that those ships which cannot "carry" the lights (that is to say, fixed in their places) shall "show" them in time to prevent collision. If it is possible

to show a coloured side-light, and it is impossible to show a white "sprit" light, then what I have to say is nonsense; but until some one does prove that it is impossible to show one light while it is not possible to show another light, then I am right, and, I venture to think, am writing sound sense.

But the very fact that small ships cannot carry a white light on the stem or bowsprit is in itself an immense advantage, because the absence of the fixed white light, and the showing of it temporarily, will help to indicate the smaller size of the ship, and therefore her greater capabilities of manœuvring.

If, in addition to the coloured side-lights as at present carried showing over ten points of the compass on each side, a stem or sprit light were "carried" or "shown," extending over four points on each side, it would lead to very much safety. If the red light or green light were seen without the white, the ship seeing it would know that the part of the vessel showing it, which is opposite to the one seeing it, is somewhere from four points on the bow to two points abaft the beam; whereas if the white light were also seen, the ship seeing it with the red light would know that the part of the ship showing it, that is opposite to the ship seeing it, is from four points to nearly a-head.

This stem or sprit light would be a very small affair: a wick of $\frac{3}{8}$ ths or half an inch would be sufficient, as it need not be seen more than a mile or a mile and a-half, and the necessary lanthorn would be very simple, a right-angled triangle in plan, with the wick in the right angle.

Yours, &c.,

W. W. B.

BOARD OF TRADE INQUIRIES.

To the Editor of the "Nautical Magazine."

SIR,—I must ask you to plead for those poor souls, the masters of ships who are sometimes condemned by the wreck courts for faults of their owners. I mention no case, and do not mean to connect my letter with any case, but I cannot help thinking that the master is often made to suffer punishment for other people's sins. In the first place, the master has nothing to do with the construction of a

vessel. As to the overloading, I believe it is quite true that masters of ships, and other persons, think the "Disc" is a criterion, and that so long as that is exposed he is under rather than over the mark. With regard to the engines and filling of sluices, the owner and not the master ought to be responsible. It is hard to make the master suffer for them. It is all very well to say a master should use his judgment, and pay no attention to his owner's orders; but what would be the result? he would at once be dismissed, and a dozen men would be ready to take his place; and I am perfectly sure no master would wish to drown himself before the right time. The master is often the only one who suffers: he loses his goods and chattels, which he cannot replace under, say, a hundred and fifty pounds. Why does the Government punish only the poor fellows who have to suffer the penalty? Why on earth the Board of Trade should spend thousands a year to get the conviction of a poor master, out of his own mouth, is a puzzle that makes me ask what is our sense of justice coming to? You may depend upon it that what the Wreck Commissioner calls "Plimsoll's Disc" is a complete delusion, and a horrid snare, and will drown numbers of sailors, unless the Board of Trade let it be well known that it is not to be trusted in the least, and that the Government does not acknowledge it, or count it of any use as a test of seaworthiness. What on earth is the thing put on to a ship's side for?

I am, Sir, yours, &c.,

Hong Kong, Dec., 1877.

CHANTICLEER.

MASTERS' AND MATES' CERTIFICATES.

To the Editor of the "Nautical Magazine."

SIR,—Your correspondent, "A. S. T.," generally has something worth saying when he favours us with a letter, and in his present one he has "tapped" a subject which may be as the "letting out of water," and may, if well followed up and ventilated, lead to the adoption by the Board of Trade of a very different standard of examination to that which obtains at present.

As to the one point upon which "A. S. T." lays much stress—viz., a false estimate of the difficulty of compass deviation being

engendered by the use of Napier's curve, and its exclusive confinement to the examination of masters—I think he has a great deal of truth upon his side, although doubtless much may also be laid to the account of the gross ignorance and mental carelessness of the men themselves, who will not, unless compelled, take an iota of interest in any subject connected with the more scientific branches of their profession. Whether Napier's form of curve presents any special difficulty I am not prepared to say ; I have never found any difficulty in making an average intellect comprehend it in half an hour, and I doubt the wisdom of allowing many ingenious ideas of individual candidates to vex the already sufficiently burdened soul of the Examiner.

One standard method is a good thing, and, when easy of comprehension, I think it better than a variable one in an examination room. But I agree with "A. S. T." that it ought to be given to every candidate for a certificate of competency. The second mate's examination in navigation as it stands now is a most laughable and ridiculous farce. Here is a man who, from the moment that he has possessed himself of a second mate's parchment, is able to take that berth aboard of the finest vessel afloat (if her owner or captain is fool enough to give it to him) asked to calculate what?—a dead reckoning and a meridian altitude of the sun. It is, as I before said, laughable.

Why, Sir, the second officer of a mail steamer is usually the navigating officer, having charge of the chronometer, and keeping record of the compass deviations, &c. ; and yet by law he has no higher examination than the veriest boy of an apprentice who has completed his fourth year, and just scraped up sufficient knowledge to struggle through the present style of examination. I know it will be said—"Oh, but second mates of such vessels are always required by private arrangement to possess a first mate's or even a master's parchment, and in point of fact many men holding masters' parchments are to be found acting even as third mates in steamships." I grant all that ; but that does not touch my point at all. I hold that the man who has undergone an examination for the grade, whatever it may be, ought to have been so examined as to be fit to take that berth on board of the finest ship afloat. Other-

wise the thing is a farce—an injustice to the rising youngster, who will find himself handicapped for ever with the dead-weight of seniors of a higher grade, who are filling up the position to which he is fairly entitled, and to which he can never hope to attain; for if that rule were to be general, how could a man ever rise above the position of second mate? Happily there are services in which a man may rise by merit, as he passes his successive examinations; but once let a man get adrift, by misfortune or otherwise, from the service to which he belongs, and he will rarely indeed, if ever, get into another with the rank to which his certificate entitles him. This acts in two ways. It is a good thing in one sense, because it prevents an outsider from entering among the seniors at once, and forces him to a probationary period of service in the junior grades of the company's; but it puts a barrier in the way of the juniors. This is all, however, a matter of private arrangement in each company, and the "powers that be" cannot interfere with it. But they can establish such an examination as shall make the candidate who passes it worthy to step at once into the position and rank which the certificate would confer.

I have long thought that it would be better to recognise legally an inferior grade, and to grant a third mate's certificate to youths of the same age as that required now for a second mate. And to the candidate for that berth, the third mate's, I would give the present second mate's examination, requiring at the same time a knowledge of compass deviation, and that he should produce the A.B.'s certificate which has lately been issued by the Board of Trade. Having once secured that, the examiner would have little need to bother the candidate on later occasions with the rudiments of seamanship. To the candidate for second mate might be given the greater part or the whole of the present first mate's examination, with the Napier's curve in addition.

To the first mate, whose duties in the general run of good ships consist less of navigation than seamanship and carrying out of duty, might be given all the second mate's work again, to see that he had not "rusted" with the Sumner's projection as at present given, and anything else that may in process of time be deemed

useful ; while the examiner would see that he was a proficient in "carrying on," and in practical duties, such as altering sails when badly cut and fitted, repairing damages, &c., and higher seamanship in general.

The ordinary master might, I think, with benefit to himself, be required to work a lunar observation, *not* computing the altitude, as the extra master is expected to do ; and for the rest, the demands of the seamanship-room are quite exigant enough as they stand at present. I advocate the "lunar," because in case of any accident to the chronometer, there is nothing so reliable as that much neglected, but good old servant wherewith to pick up the ship's position, and reinstate the timekeeper.

I am almost afraid to suggest any further work for the master, however, because the difficulty of satisfying the examiner now is so very great. The arithmetical accuracy demanded is the stumbling block upon which so many really clever men, but careless calculators, split and go down ; and the examination takes up two whole days in navigation alone as it is, the latest innovation of Summer's projection causing the fall of many. It does seem very hard to men who are accustomed to such rough and ready practical work at sea, that they should be subjected to such rigid test questions and rigorous strictness when under examination ; but I believe the intense accuracy with which they are compelled to work the questions has a beneficial effect in the long run ; and although they may return to their "dodges" at sea, they can never be quite so careless as before such an ordeal. My experience has been, that many a clever navigator has failed to pass through sheer inability, from disgust and annoyance, to discover a mistake when made ; but such carelessness ought not to exist. And I cannot help feeling that the man who cannot or will not school himself to the cool-headedness requisite for finding his errors on shore, after, perhaps, weeks of preparation, will be of very little value as a reliable navigator when on board.

Apologising for the length of my letter, and hoping that some abler pen will take up the subject,

I remain, Sir, your most obedient servant,

ARTHUR B. MARTIN.

Norie's Nautical Academy, 157, Leadenhall Street.

OUR PARLIAMENTARY RECORD—SESSION 1878.

On Tuesday, March 12th, 1878, Mr. PLIMSOLL asked the Secretary of State for the Home Department "if his attention had been called to the case of six seamen having been charged for refusing duty on board the *Tiara*, the allegation against them being that they refused to wash the deck on a Sunday morning; upon proof of which they were sentenced by two Liverpool magistrates to twelve weeks in gaol and forfeiture of wages, that being the maximum punishment inflicted even where danger to the ship and to lives on board results from insubordination; and whether, if the facts are as stated, he has any objection to order the release of the men."

Mr. CROSS, in reply, said: "According to a letter he had received from the magistrates, the men were not in prison, so he could not let them out. In the next place nothing was said about refusing to wash the decks on Sunday morning; the men were not imprisoned for twelve weeks, nor was the *maximum* forfeiture of wages imposed. There were two accusations—one against some of the men for disobedience, on the 1st of December, on the high seas, and the other against others for the same offence on the 7th. The men pleaded guilty and no evidence was taken. It was a case deserving four weeks' imprisonment, not twelve, and two days' deduction of pay, and not forfeiture of the entire. The seamen were in combination, and it was on that account the punishment was inflicted. The version of the transaction contained in the hon. gentleman's question was evidently incorrect."

On Thursday, March 14th, 1878, Mr. CHILDERS asked the Chancellor of the Exchequer "whether the Suez Canal Company have carried into effect the undertaking given by M. de Lesseps to Colonel Stokes in February, 1876, that the Canal Dues should be charged on the tonnage shown by the Board of Trade special certificates, or still continue to charge on the tonnage shown by their own measurements; and, if the latter be the case, what steps have been taken by Her Majesty's Government to secure the

performance of this undertaking which formed part of the consideration for the postponement of the reduction of the surtax, of which the Canal Company have had the advantage."

The CHANCELLOR OF THE EXCHEQUER, in reply, said : " As my right hon. friend is aware, there has been a good deal of difficulty in this matter ; but I have just seen Mr. Rivers Wilson, on his return from Paris, and I can state since the acceptance by M. de Lesseps, in the early part of last year, of the conclusions of the Constantinople International Tonnage Commission, and the withdrawal of his protests, the Suez Canal Company have recognised the special tonnage certificates given by the Board of Trade in their assessment of the dues to be paid by British vessels. The Company contested, however, the interpretation of the Constantinople Rules in certain particulars as applied in the Board of Trade measurements. The Company contended that certain spaces in the vessels were improperly excluded from the net tonnage on which the dues were to be levied, and assumed to themselves the right of verification, with the object of adding and charging for any such additional spaces. In consequence of the complaints addressed to Her Majesty's Government by the shipowners on this subject, instructions were given to the British Directors to come to an understanding with the Company on the matters in dispute. Negotiations have accordingly been in progress for several months, and were brought to a final conclusion at the meeting of the Council this week. The general purport of the arrangement, which it is to be hoped will be acceptable to the shipping community and will remove all existing causes of dissatisfaction, is that a distinct agreement has been come to as the limits and conditions under which the disputed spaces are to be included in or excluded from the net tonnage, subject to taxation, and that the verification by the Company is to be confined to ascertaining that the deducted spaces are correctly appropriated to their proper uses ; that no changes have been made in them since the delivery of the Board of Trade certificate, and that no spaces have been added without being included in the tonnage, the object being, not to test the accuracy of the official measurements, but to prevent abuses by which the Company may be

defrauded. The Council of Administration, at its last meeting, adopted a revised *Règlement de Navigation*, which will give effect not only to the new agreement, but to all that was done by the Tonnage Commission at Constantinople in 1878-4 and under the convention between M. de Lesseps and Colonel Stokes, at Cairo, in 1876. This *Règlement* will be published in a few days, and will come into effect on the 1st July next. Her Majesty's Government have undertaken to furnish the Commission with weekly lists of all vessels holding Suez Canal special certificates. Every vessel not provided with a certificate may be measured by the Canal authorities in conformity with the Constantinople rules, and must pay her dues according to such measurement until she produces a special certificate from the authorities of her own country."

On Tuesday, March 26th, 1878, Mr. PLIMSOLL asked the First Lord of the Admiralty "if his attention had been called to the fact that the sale of worn-out boilers by the Admiralty has frequently led to their being re-used as boilers, to the great danger of human life, as in the case of the *Gazelle*, a new vessel which, having been fitted with boilers bought in this way, was destroyed in consequence of the boilers bursting the first time they were used; and, whether he is prepared to give the House an assurance that in future no boilers shall be sold as boilers unless they are still strong enough to be used for generating steam, and that all boilers unfit for use as boilers should be so battered or otherwise dealt with so as to preclude the possibility of any tradesman selling or using them except as old iron?"

Mr. W. H. SMITH, in reply, said: "The Admiralty have anticipated the hon. gentleman. In October last the Board of Trade represented to the Admiralty that a boiler said to have been sold at one of the Dockyard sales had exploded. The Admiralty immediately gave directions to prevent the recurrence of such an evil; and I cannot do better than read the instructions which have been given on the subject:—'The Board of Trade having reported that a boiler which exploded a short time ago on board a steam launch was alleged to have been purchased at one of the sales in her Majesty's dockyards, my Lords Commissioners of the Admiralty have decided that in future all old boilers are to be broken up in the dockyard

by dockyard workmen, or under contract, if the state of the vote will allow. If the old boilers cannot be so broken up, and it is found requisite to sell them, they are to be reserved for the next periodical sale as heretofore ; but the conditions of sale shall expressly stipulate that such old boilers are sold to be broken up for use as old iron only ; and, to prevent as far as possible any infringement of this condition, they are to be mutilated, or partially destroyed, before they are offered for sale, so as to preclude their being used again.' "

On Friday, March 29th, 1878, Mr. PLIMSOLL asked the President of the Board of Trade "if his attention had been drawn to the memorial signed by more than fifty pilots of Cardiff, which states that the Cefn-y-wrach shoal, at the entrance of the port of Cardiff, constitutes a danger to ships of large burden leaving or entering the port, many vessels having grounded since the channel originally cut through the shoal has become useless, in consequence of its having silted up in at least three places ; and whether, under these circumstances, he will comply with the prayer of the memorial, praying that he would send down a surveyor to examine and report upon the state of the shoal ? "

Mr. E. STANHOPE, in reply, said : " My right hon. friend, the President of the Board of Trade, has received, both from some Cardiff pilots, and also from certain shipowners and shipbrokers at Cardiff, a request to send a competent surveyor to examine the Cefn-y-wrach shoal, at the mouth of the Taff. It appears that the Bute Trustees, who originally cut the channel through the shoal, have given orders that the obstructions which have grown up in it should be forthwith removed by their engineer, and therefore, until the result of the proposed operations of the Trustees is known, he proposes to defer further consideration of the representations of the pilots and shipowners."

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all communications should be addressed.

ENGLISH (APPLICATIONS).

1165. George Edward Hall, Herne Hill, Surrey. "Improvements in life-preserving apparatus or buoys."

1171. Sir Joseph Whitworth, Bart., Manchester. "Improvements in armour for ships and forts."

1244. Henry Daniel Deane, Brooklyn, King's County, U.S.A. "Improvements in screw-propellers."

1268. John Lorimer Corbett and David Hosie, both of Glasgow. "Improvements in propellers for steam ships and vessels."

1300. Samuel Wilkinson Snowden, Rathgar, Dublin. "Improvements in steering ships."

1301. Wm. Palmer, Stratford, Essex. "Improvements in railway and ships' lamps."

1303. John Louis Lay, Paris. "Improvements in torpedo boats, and in apparatus for facilitating the launching, guiding, controlling, and supervision of the same, and for removing or destroying torpedoes, mines, and other obstructions placed in harbours, rivers, or the like."

1305. Andrew Betts Brown, Edinburgh. "Improvements in hydraulic capstans, and in valves for distributing the fluid pressure and the engines thereof."

1308. James Shaw, London. "Effectually preventing the sudden capsizing of vessels large or small."

1344. Samuel Canning, London, Knight. "Improvements in apparatus for communicating signals on shipboard."

1398. Thos. Horsfall Watson, and Samuel Joseph Woodhouse, Leeds. "Improvements in the construction and manufacture of armour plates."

1405. Jas. Alexander Walker, Bow, London, civil engineer. "An improved means of suspending ships' saloons and cabins,

cattle pens, and other structures to counteract the rolling, pitching, compound, and transitory movements of a vessel at sea."

1418. Frederick Wm. Heinke, and Wm. Griffin Davis, both of London, submarine engineers. "Improvements in apparatus or appliances for arresting or annulling the action of torpedoes upon ironclad ships and other structures."

1425. Charles Smith, Hartlepool, engineer. "Improvements in steam boilers."

ABRIDGEMENTS.

2803. Joseph Bennett Howell, Sheffield, steel manufacturer. "Improvements in the prevention of leakage in boats, ships, torpedo boats, and other war vessels." This consists in covering the sides of the ship with plates of India-rubber, or other elastic material, so that when an incision is made by the passage of a shot or missile, such incision shall be immediately closed by the India-rubber or other elastic substance returning to its normal position and condition. It is applicable also to timber laden and other vessels, whose cargoes are apt to expand from absorption, thereby opening the joints of the ships and causing leakage.

2813. George Fellows Harrington, Ryde, in the Isle of Wight, dentist. "Improvements in propelling ships or vessels." This invention, which is termed the "fish gill principle of screw propulsion," consists in forming the parts of the hull which are to be immersed into twin sections, with parallel outsides and a bottomless space or waterway between the divided parts. The bow of each section is formed to incline from the outside inwards, at an angle of from 45° to 60° , causing the water to converge upon a screw or screws placed in the bow. At the rear of the screws, the sides, which bound the waterway, diverge until they terminate at the extremities of the parallel outside of the hull. By these means the force, which the screws communicate to the water, raise it above its mean level in their rear, which re-acts upon the hull of the vessel assisting to impel it, as such water returns to its mean level.

3032. Duncan Mac Ivor Campbell, Loch Gair House, Argyll, N.B. "Improved arrangements for preventing or nullifying the destructive action of torpedoes and such like explosive agents upon ships or vessels." This consists in protecting the non-yielding plates

of an iron-clad or other vessel, by means of a covering of India-rubber, gutta-percha, or other suitable elastic substance, incorporated with numerous air-chambers, the additional elastic properties of which, under extreme pressure, will be a powerful repelling agent.

3120. George Ovid Topham, Maida Vale, County of Middlesex. "Improvements in suspending seats, couches, and berths on ship-board for the prevention of sea sickness." This consists in suspending the seat, couch, or berth in gimbals, whose axes stand diagonally to the seat, &c., and are at such a height relatively thereto that the stomach of the occupant is in the plane of the axes; and where there is no motion, and which is consequently the most favourable position for the avoidance of sea sickness, the rolling and pitching motions of the ship being thus completely neutralised. The chair, couch, or berth is hung on a frame of two [] shaped pieces, at right angles to one another, passing underneath the chair, and united at the point where they cross one another. The chair or berth is hung on axes between two of the arms; other two arms are similarly hung on axes (at right angles to former), supported by uprights fixed to the deck or carried on a wheeled stand so as to be moveable from place to place; or when used in cabins, the supports would be pendant from the ceiling, the gravity of the occupant maintaining it in a horizontal position.

2786. Alexander Jardine, Alderman, Tredegar Square, Bow, Middlesex. "Improvements in ships' windlasses and capstans." This invention relates to windlasses and capstans for heaving in and paying out chain cable, which is an arrangement in one windlass or capstan of a chain wheel and a barrel, so that both are free of the movement of each other, or can be clamped together and act together, and be used for heaving in chain by the chain wheel and passing it over to the barrel to gather and pass it away, and also for paying out cable by disconnecting the barrel and chain wheel whereby the former can rotate freely on its axle.

3202. Wm. Henry Dupré, Jersey. "Improved apparatus for ventilating ships, houses, and other buildings." This consists in constructing ventilators and cowls with deflecting downward blades opening into internal passages or chambers, and arranged so as

to concentrate the draught in an upward or downward direction through the body of the cowl with greater freedom than hitherto.

3297. John Isaac Thornycroft, Church Wharf, Chiswick. "Improvements in torpedo apparatus for vessels." This invention has reference to apparatus for operating with fish torpedoes such as the "Whitehead" torpedo; it consists in a cradle or case in conjunction with levers or arms hinged or jointed to the vessel. The cradle or case is suspended to levers which are jointed to other levers carried by a rocking shaft, the suspension levers being also connected to the vessel by connecting rods hinged or jointed to the suspension levers and to the vessel. It will thus be seen that the torpedo during the operation of lowering as well as when in the firing position remains close to the side of the vessel, thereby obviating any risk or inconvenience from excessive leverage which would have a tendency to tilt or upset the boat.

3359. Louis Brennan, Fitzroy, Victoria, Australia, and Wm. Calvert, Melbourne. "Improvements in machinery for propelling and guiding vessels on land and through air and water." This relates principally to guiding torpedoes, and consists in giving motion to them by means of wire wound on reels on the torpedo or boat, and unwound on to reels on shore, the motion of the unwinding on board driving a propeller. Two drums are employed, and the wire is wound independently of each, and can be operated at various velocities so as to steer the torpedo or boat through the medium of gearing connected to the rudder operated by the reels. Fins are placed so as to control the upward or downward motion of the vessel, and are operated by a weighted diaphragm on the reducing valve principle, and arranged to control the angle of the fins, and consequently the depth of the torpedo.

4365. James Munro, Seaforth, Liverpool, engineer. "Improvements in ventilating ships and in apparatus or appliances therefor." This consists in inducing currents of air from various parts of the ship, by means of the heat radiating from the funnel. For this purpose a casing is built round the funnel, and an induction pipe fitted on, connected to branch pipes, which proceed to the various parts of the ship to be ventilated. A rain and dirt guard is fitted at the top of the casing to protect the funnel. A steam

jet can be sent up the casing to aid the draft. In some cases the apparatus is applied to the galley funnel, which is fitted so that the soot and dirt are easily removed.

CANADA.

8260. Thos. J. Southard, Richmond, Me., U.S. "Improvements on capstans and windlasses."

8325. M. Bourke, Youngstown, Ohio, U.S.A. "Improvements on boat-launching apparatus."

8333. M. Bourke, Youngstown, Ohio, U.S.A. "A life-boat."

VICTORIA.

2363. Thomas Thompson, Bluff harbour, Otago, in the colony of New Zealand. "Improvements in apparatus for lowering and raising boats from vessels afloat and in detaching such boats when lowered."

AUSTRIA.

55. J. S. Kunstädter, London. "Improvements in propelling and steering vessels."

118. E. E. Wiggell and C. Halsey, London. "Improvements in engines for propelling boats, yachts, torpedoes, and for other purposes."

FRANCE.

120183. Priestman. "Improvements in capstans, cranes, and hoists."

120212. Barret. "A system of weirs for river navigation."

120417. Allo. "A life apparatus."

120568. Lumsden Thomson. "Protecting the surface of iron vessels."

120991. Whitworth. "Improvements in armour-plates for vessels and forts."

121096. Topham. "Improvements in the suspension of seats, beds, and doors on board ship, for the prevention of sea-sickness."

121231. Preiswerk. "A propeller for vessels, and for other purposes."

121294. Lafargue and Martin. "Improvements in apparatus for steering steam vessels by hydraulic power, also applicable to the driving and reversing of steam and other motive power engines."

12136. Brice. "Improvements in ships' davits."

GERMAN EMPIRE.

951. A. Lafargue and C. Martin, London. "An apparatus for steering vessels by means of hydraulic pressure."

1015. Schäffer and Budenberg, of Buckan, Madgeburg. "A gyrometer for marine engines."

NORWAY.

1. Ramsten. "A propeller log."

AMERICAN.

200510. H. Harrison Cole, of Philadelphia, Pennsylvania. "Improvements in twinhooks." This invention consists in so hinging together the two hooks forming a twinhook that a suitable cam combined with the hooks will engage in a recess or notch in one hook by reason of the application of a spring, so that when the hook is closed it is securely held in that position until intentionally liberated by raising the cam from the notch in the hook.

200613. Thomas W. Hyde, of Bath, Maine. "Improvement in pin-rails for vessels." This consists in forming a pin-rail of cast iron in two pieces bolted or otherwise fastened together so as to be adjustable after the mast is in position, and also capable of being tightened should it become loose through shrinking of the mast or other cause.

200572. Detlef Ruge, of Providence, Rhode Island. "Improvement in life-preservers." This invention has reference to improvements in portable or pocket life-preservers, and is so constructed that the two ends of an elastic tube are firmly secured so as to form a continuous tubular ring by passing one end over and beyond a sleeve, and the other end over the first and beyond the sleeve, so that the same are firmly held by the elasticity of the tube. The air-hole, or valve, is covered with a lap of India-rubber, in such position as to firmly cover the hole, but at the same time can be easily rolled up with the hand when required to admit or expel the air. This life-preserver can be easily carried in the coat-pocket; and no matter how cold, stiff, or excited the wearer may be, when an emergency arises to use the same, he can readily pass the tube around his body, pass his hand in either direction over the India-rubber, so as to expose the air-hole and fill the tube with air, release the rolled lap, and the same will close firmly and retain the air contained in the tube.

200,577. Levi Shook, of Pittsburg, Pennsylvania. This consists in combining with a paddle-wheel one or more "splash-boards," adapted and arranged to deflect the water splashed or thrown up by the entering paddles. These splash-boards are secured to the arms of the wheel just above the paddles, and may be made of any material, but preferably three-quarter inch planking, and do not materially add to the weight of the wheel. When in use, the water splashed or thrown up by the entering paddle strikes the splash-board of the preceding paddle, assisting the paddle somewhat, is deflected thereby and falls in advance of the entering paddle, rendering the water more solid for the entering paddle and, being prevented from passing through the arms on to the rising paddle, relieves them of additional weight. It can be readily and cheaply applied to the paddle-wheels in common use.

200578. William C. Smalstig, of Springfield, Missouri. "Improvement in feathering paddle-wheels." This invention belongs to that class of feathering paddle-wheels in which the paddles are attached to radial arms, and have rotation with the arms round the driving shaft and also an independent rotation on their own shafts, which revolve in bearings in the ends of the radial arms. The wheel has a double cam-race, and the cranks are set nearly at right angles to one another; the races are so arranged that the arm managing the paddle is outside of the planes of the paddles at the point of their revolution where they enter and leave the water, thus giving a greater leverage. By this construction, also, the arms are either inside the race or in the circle formed by the race, thus always having a shield around them.

200673. Robert R. Spedden and Daniel F. Stafford, of Astoria, Oregon. "Improvement in anchors." This invention relates to a novel method of constructing ships' anchors, and consists in hinging or pivoting a single fluke provided with cam-shaped tripping arms at its base in a peculiarly constructed frame or shank. This shank, on account of its peculiar shape, serves both as shank and stock and is devoid of any projecting arms or points to come in contact with the ship's sides or bottom when it is being taken up, or to entangle the cable or chain so as to foul the anchor when it is resting on the bottom.

200766. Edward Rowell, Salem, Massachusetts. "Improvement in devices for reefing jibs." This invention relates to jibs of schooners, sloops, and other vessels, and consists in an arrangement of eyelets in the foot of the jib and bull's eyes attached to the upper edge of the bonnet, which are fitted to the eyelets in the jib and are secured by means of a lace line which runs through all the bull's eyes, and is provided with a metallic end-piece that is fitted to a tack lock that is connected with the bolt-rope and with the bonnet. The advantages in this improvement are that it is not necessary to go out on the bow-sprit to furl the bonnet as it clears itself and can be hauled in on board; the bonnet can be taken off the jib without taking the jib down.

200951. Simon Tragheim, New York (City, County, and State). "Improvement in screw propellers." This invention consists of a screw propeller with blades strengthened by an outer frame, extending at both sides of the blade at an oblique angle of inclination to the same, from the boss outwardly and across the outer centre point of the blade. The front and rear edges of the strengthening frames are bevelled to facilitate their cutting through the water.

201119. Thos. H. Neale, of the City and County of Philadelphia and State of Pennsylvania. "Improvement in atmospheric propellers for vessels." This invention relates to the propulsion of boats by means of traction obtained upon the atmosphere. For this purpose are employed two atmospheric propellers which, mounted upon the boat, and operated by a small mechanical power thereon, transmit the created power to the boat, so as to uniformly and powerfully propel the same, and the tendency of the boat to deviate from its course is prevented.

201860. Thomas Spear, Green Bay, Wis. "Steering apparatus." This relates to that class of apparatus in which the wheel is fitted on to a diamond-screw shaft, two diamond-screw boxes, to each of which levers or links to the yoke or the rudder are connected. It consists in fitting rubber cushions to each of the ends of the box-frame, so that the screw-boxes abut against them when the rudder is "hard up" or "hard down," thus preventing or easing the shock to the screw-boxes and shaft when the rudder is struck by a heavy sea.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
108	ENGLAND—South Coast—Isle of Wight	Light-vessel and buoys to mark wreck in Sandown Bay.
104	" West Coast — St. George's Channel—Smalls Lighthouse	Fog-signals and call rockets established.
106	IRELAND—North West Coast—Donegal Bay—Killybegs Harbour	Sector of light to cover rocks.
106	BALTIC—Gulf of Riga—Runo Island	New lighthouse and light.
107	MEDITERRANEAN—Candia—Suda Bay	Lights re-established.
108	BLACK SEA	Lights re-established.
109	" Kherson Bay	New regulations.
110	INDIA—West Coast—Bombay Harbour—Dolphin Rock	Alteration of light.
111	" " Malwan Harbour	Alteration of lights.
112	BAY OF BENGAL—Ceylon—Bassas Rocks	Light established and fog-signal altered.
113	" Martaban Gulf—Krishna Shoal	Position of light-vessel.
114	AUSTRALIA—South Australia—Penguin Island and Althorpe Island	Lights to be established about 1st August.
115	" South Australia—Spencer Gulf—Eastern Shoal	Light established.
116	" South Australia—Ports Victoria, Kikaby, Minlacowie, and Turton	Sailing directions and recent surveys.
117	" South Australia—Streaky Bay	Discovery of rocks.
118	" Queensland—Moreton Bay—Yellow Patch	Alteration of light.
119	" " Moreton Bay—Brisbane	New tidal signal.
120	" " Pioneer River	New tidal signals.
121	" " Cleveland Bay	New light.
122	" " Magazine Island—Trinity Bay—Low Isles	Temporary light.
123	UNITED STATES—California—Fort Point, San Francisco Bay	Alteration of light.
124	" Mississippi River—South Pass	New automatic signal buoy.
126	" Massachusetts—Eastern Point	Alteration of light.

NAUTICAL NOTICES.

108.—ENGLAND.—*South Coast.—Isle of Wight.—Light-Vessel and Buoys Marking Wreck in Sandown Bay.*—A dockyard vessel (*Dromedary*), from which a *fixed white* light is exhibited at night, has been placed one cable southward of the wreck of H.M.S. *Eurydice*, sunk in Sandown bay. The wreck is lying in $11\frac{1}{2}$ fathoms water, with the following bearings, viz. :—Pitch of Dun-nose W. by S. $2\frac{1}{2}$ miles ; Culver cliff N.E. $\frac{1}{2}$ N. Also, *green* buoys have been placed on the south and north sides of the wreck, at the distance of half a cable.

Note.—Should a vessel be observed approaching dangerously close to the wreck during the night, a gun will be fired from the light-vessel marking the wreck, accompanied with a rocket and long light.

104.—ENGLAND.—*West Coast.*—*St. George's Channel.*—*Smalls Lighthouse.*—*Fog-Signals and Call Rockets.*—The alterations and arrangements proposed (*see No. 3, p. 84*) are now in operation.

105.—IRELAND.—*N.W. Coast.*—*Donegal Bay.*—*Sector of Red Light to cover Bullockmore Rock, &c.*—On and after the 1st June, 1878, a sector of red light will be shown from the lantern of the Killybegs harbour lighthouse to cover the Bullockmore rock, and the dangers from that into St. John's point lighthouse. The red sector will be seen between the bearings of N.E. by E. $\frac{1}{2}$ E. (over an arc of $24\frac{1}{2}^{\circ}$) into St. John's point lighthouse.

106.—BALTIC.—*Gulf of Riga.*—*Light on Runö Island.*—A new light is shown from a lighthouse recently erected on Runö island, Gulf of Riga. It is a *fixed white* light, elevated 218 feet above the sea, and visible 17 miles. The tower is round, of iron, painted grey, with a red roof: it stands on Hockberg hill, on the S.E. part of the island, and being surrounded by wood only the lantern and roof are visible. Position, lat. $57^{\circ} 48' 8''$ N., long. $28^{\circ} 15' 32''$ E. The old light is extinguished. There is a lifeboat station on the south coast of Runö island.

107.—MEDITERRANEAN.—*Candia or Crete.*—*Suda Bay.*—The lights on cape Drepano, and on Suda island, Suda bay, are re-exhibited; and the regulations prohibiting vessels entering Suda bay at night have been annulled.

108.—BLACK SEA.—*Re-exhibition of Lights.*—The lights at Sandy island (St. George mouth, Danube river), at the Sulina mouth of Danube (north pier and south side), and at Serpent island are now shown.

109.—BLACK SEA.—*Regulations for the approach to Kherson Bay.*—On the ice breaking up in Kherson bay, and until the guard ships are moored in their respective stations, all vessels must anchor westward of the meridian of Souvorovski lighthouse, whither steamers will be sent to tow them in. Entering or leaving Oshakov roads at night is forbidden.

110.—INDIA.—*West Coast.*—*Bombay Harbour.*—*Alterations in Dolphin Rock Light.*—Since March 1st, 1878, the following alterations have been made in the character of Dolphin rock light, Bombay harbour:—The light (*fixed*) now shows *green* between the bearings of north and west; *white* between west and S.W. by W. $\frac{1}{4}$ W. (this sector indicates the anchorage for the English mail steam vessels at night); and again *green* between S.W. by W. $\frac{1}{4}$ W. and S.S.E. $\frac{1}{4}$ E.

111.—INDIA.—*West Coast.*—*Alterations in Malwan Lights.*—Since 1st March, 1878, the following alterations have been made in the colour and position of Malwan light:—A *fixed green* light is now shown from the beach, 280 yards northward of the position of the former light, and elevated 20 feet above high water. A *fixed red* light is also exhibited from a boat moored south-eastward of the rock at the entrance of the port. On the exhibition of these lights, the fixed white light formerly shown was discontinued.

Directions.—Entering Malwan (Melundi harbour) at night, keep the green light just open southward of the red light, passing close southward of the red light, thereby avoiding the rock awash, Malwan and Johnston Castle rocks, and anchor with Vingorla rock light in line with the small fort bearing about S $\frac{1}{4}$ W.

112.—BAY OF BENGAL.—*Coast of Ceylon.*—*Lighthouse on the Little Basses Rocks, and Alteration of Great Basses Fog-Signal.*—The light is now exhibited as indicated in No. 34, p. 174; and the fog-signal is now altered, see No. 85, p. 174.

113.—BAY OF BENGAL.—*Martaban Gulf.*—*Position of Krishna Shoal Light-Vessel.*—With reference to Notice No. 91, p. 389, the Krishna shoal light-vessel (*Star*) is in lat. $15^{\circ} 36' 15''$ N., long. $95^{\circ} 34' 30''$ E.

114.—AUSTRALIA.—*South Australia.*—*Penguin Island and Althorpe Island.*—It seems probable that the lights on Penguin island and Althorpe island will not be exhibited before 1st August, 1878. Further particulars will be furnished.

115.—AUSTRALIA.—*South Australia.*—*Light on Eastern Shoal, Spencer Gulf.*—In accordance with Notice No. 68, p. 292, since 1st April, a *fixed white* light, visible 8 miles, would be shown from a light-ship moored in 9 fathoms at low water, to the westward of

the north end of the Eastern shoal, Spencer gulf, in lat. $33^{\circ} 8' 15''$ S.; long. $137^{\circ} 46' 30''$ E.

116.—AUSTRALIA.—*South Australia.*—*Ports Victoria, Rickaby, Minlacowie, and Turton.*—*General Remarks.*—These ports are all in Hardwicke bay, on the east side of Spencer gulf. The bottom is rocky at all of them; with a good scope of chain a vessel will, however, ride safely. In approaching any of these ports at night a vessel should anchor immediately on shoaling her water to less than five fathoms, unless it is light enough to clearly identify her position when the most convenient berth may be sought. Five fathoms will, as a general rule, place a vessel within one mile of the shore, but in some parts of Port Victoria and Point Turton much nearer, and it will clear all dangers.

It is high water, full and change, at 2 hours 30 minutes all over Hardwicke bay, the spring range being six feet. The tidal streams follow the direction of the coast, the flood running to the northward and ebb to the southward.

Port Victoria.—The anchorage between Wardang island and the peninsula to the N.E. of it was formerly known by this name. The bay to the N.W. of Point Gawler is now called Port Victoria, and is the place described here—

The jetty is three-quarters of a mile north of Point Gawler, and runs N.W. by W. $\frac{1}{4}$ W. 950 feet from high-water mark. It is 13 feet 6 inches above low water, or 10 feet 6 inches above the mean level of the sea. There are 9 to $9\frac{1}{2}$ feet water on both sides for 150 feet from the outer end, or as far as the steps; depths from $8\frac{1}{2}$ to 6 feet on both sides for 300 feet farther in; and from thence the depth gradually decreases to low-water mark, which is 700 feet from the outer end of the jetty. This jetty is not available for a vessel drawing more than nine feet. With a fresh S.W. wind (the prevailing sea breeze), the sea comes in from that quarter, and a vessel could not lie on the south side at all.

Eclipse Rock lies W. by S. $\frac{1}{2}$ S., $2\frac{1}{2}$ cables from the outer end of the jetty, and N. $\frac{1}{4}$ W. 7 cables from the north part of Gawler point. Its extent, with 6 feet water, is 70 yards east and west, and 100 yards north and south, and double those distances with less than 12 feet, there being 14 to 15 feet water to the eastward,

and 18 to 20 feet close to the westward of the latter area. A red buoy with staff and ball lies at the south end of the shallow part.

Midway between the Eclipse rock and the jetty end there are only 8 feet water, and but 6 feet S. by W. $\frac{1}{2}$ W. one cable from the outer end of the jetty. Due north of the jetty there is as much water as there is alongside it. Rocks which cover and uncover stretch from Point Gawler $8\frac{1}{2}$ cables towards the Eclipse rock, with 16 to 20 feet water between.

The main street of the township of Wauralte is in line with the jetty; the houses at present are not visible until to the northward of Point Gawler.

Directions for Port Victoria.—From the northward: From one mile south of Wardang island steer N.E. by E. 7 miles to Port Victoria jetty, taking care not to bring the extreme of the rocks off the south point of Wardang island to bear to the southward of S.W. by W. to avoid the shoals between the island and Port Victoria. From the southward: From one mile N.W. of Corny Point to Port Victoria jetty the course is N.E. $\frac{1}{2}$ N. $88\frac{1}{2}$ miles. Point Gawler is steep-to, there being 8 fathoms less than one cable off. The buoy on the Eclipse rock should not be approached nearer than one cable. To clear that rock and the rocks north of Point Gawler, the extreme of the point should not be brought to bear southward of S. by E. until the outer end of the jetty bears south of east when the jetty may be steered for.

Anchorage.—Vessels of 18 feet draught may anchor in 21 to 23 feet, with the jetty end bearing S.E. $\frac{1}{2}$ E. half a mile distant. If of more draught, with the same place east, three-quarters of a mile, in 26 to 27 feet. Small vessels unable to go alongside the jetty should anchor in 10 to 12 feet with the jetty end S.S.E. $1\frac{1}{2}$ cables distant. The light at the inn above the jetty is not to be depended on at night.

[*Note.*—There is a channel between Wardang and Rocky island with 9 feet least water at present. Its position and depth has altered so considerably since 1867 that its use cannot be recommended, neither would it be worth while to beacon it.]

Port Rickaby, where a jetty is to be built, is off a sandy beach in latitude $84^{\circ} 40' 30''$ S. 10 miles south from Point Gawler. The

length of beach clear of fronting rocks is nearly 4 cables in extent. To the northward there is a large area of rock which covers and uncovers with the tide ; the most projecting point of it is N. $\frac{1}{2}$ W. half a mile from the north end of the beach, and 4 cables off the sandy bank at high-water mark to the eastward. The high-water line at the back of the beach runs N. by W. and S. by E., with two bare sandhills behind, the northern 58, and the southern 55 feet above high-water mark. To the northward the high line trends to the N.E. with a low bank behind, covered with sheoaks. From the south end of the beach the coast runs S.S.W. 3 cables to a rocky point. Rocks which dry at low water stretch one cable off this point. There are only 2 feet of water two cables west from it, and the outer extreme of the reef with 10 feet water on it, and 20 to 22 feet close to outside, is $2\frac{1}{2}$ cables west of the point. South of the southern beach sandhill there is a gap through which Rickaby's house is visible from the westward ; sandhills then commence again, the most conspicuous one being half a mile to the southward of the beach, 69 feet high, and with some sheoaks on the top.

Soundings.—Off the clear beach the general 3-fathom line is only $1\frac{1}{2}$ cables distant. Several rocky patches with 16 to 18 feet water on them, and 19 to 24 feet about them, lie farther out, the most distant being nearly 4 cables west from the centre of the beach. The bottom is very irregular farther out, but there is nothing less than 20 feet, and 5 fathoms 1 mile off shore.

Directions for Port Rickaby.—From the northward : From 1 mile south of Wardang island the course is S.E. $\frac{1}{4}$ E., 10 miles. From the southward : from 1 mile N.W. of Corny point the course is N.E. by E. $\frac{1}{4}$ E., $27\frac{1}{2}$ miles, but a vessel must not stand to the eastward so far as to bring Corny point to the westward of S.W. by W. until Mount Gore (which is the highest land to the southward of Point Turton), bears south, to avoid the shoal ground in the south part of Hardwicke bay. A large vessel should anchor $\frac{1}{2}$ of a mile off shore, with the southern beach sandhill (on which there is a pole), bearing east, in 4 to $4\frac{1}{2}$ fathoms. A small vessel, with the sandhill on the same bearing, 2 cables off shore, in $3\frac{1}{2}$ fathoms. To clear all dangers a vessel should not come within

a mile of the coast, until the southern beach sandhill bears between E.N.E. and S.E. There is a fetch of about 70 miles to the westward of Port Rickaby, so a gale from that quarter might oblige a vessel to slip her cable, and she should have room to get under-way. Although there is comparatively shallow water in Hardwicke bay, the bottom is so rocky that it has not much effect in breaking the sea. A strong sea breeze from the westward causes enough run on Rickaby beach to make care necessary in landing on it from a boat.

Port Minlacowie.—The jetty is N.E. $\frac{1}{4}$ N., 8 miles from Point Turton, and 7 miles to the southward of Brown point. It extends west 1,155 feet from high-water mark, and is 15 feet 6 inches above low-water, or 12 feet 6 inches above the mean level of the sea. There are 14 feet of water at the outer end on the south, and 13 on the north side; 11 feet water on both sides 90 feet in, and 9 feet on the north, and 10 on the south side at the steps, 150 feet from the end. Seventy-five feet further in there are only 8 feet on the north side, and depths varying from that to 5 feet in to low-water mark, which is 700 feet from the outer end of the jetty. On the south side at 75 feet in from the steps there are 8 feet water, and only 3 feet 75 feet further in, with not much more between there and low-water mark.

Rocks.—A dangerous rock with only 4 feet water on it lies N. by E. $\frac{1}{4}$ E., one-third of a cable from the outer end of Minlacowie jetty. It is the S.W. point of a shallow ledge, with 2 to 6 feet water over it, which extends a quarter of a mile to the northward. There are only 9 feet rather more than $1\frac{1}{2}$ cables N.W. from the outer end of the jetty, and several places with the same depth between—one 11 feet rock lies W. $\frac{1}{2}$ N. three-quarters of a cable, and another W. by S. $\frac{1}{4}$ S., nearly $1\frac{1}{2}$ cables from the outer end of the jetty. The former has 13 to 15 feet water all round, and the latter 16 to 17 feet. A 12 feet rock lies $5\frac{1}{4}$ E. half a cable from the last-mentioned, and there are only 11 feet S.W. $2\frac{1}{4}$ cables from the outer end of the jetty. A rock with 3 feet water over it lies S. by E., 75 feet from the jetty steps.

Soundings.—To the northward and southward of Minlacowie jetty the 3 fathom line is, on the average, half a mile off shore,

except at rather less than a quarter of a mile to the northward of the jetty, where there are 18 feet water within a quarter of a mile from high-water mark. There are no dangers outside the 3 fathom line, the depth rapidly increasing to 5 fathoms, which will be found at an average distance of one mile from the coast.

Aspect.—About Minlacowie the shore is backed by low sandhills 20 to 40 feet high, covered with bushes and sheoaks, and fronted by a ledge of rock which dries to about $1\frac{1}{2}$ cables from high-water mark.

Directions for Minlacowie.—From the northward: from 1 mile S.W. of the south point of Wardang island, the course is S.S.E. 19 miles. In working to windward in Harwicke bay the east coast may be approached as near as 1 mile, or into 5 fathoms; and a vessel should stand off about 6 or 7 miles before tacking inshore. From the southward: from 1 mile N.W. of Corny point large vessels should steer N.E. by E. $\frac{1}{4}$ E. 16 miles, and not bring Corny point to bear west of S.W. by W. until Mount Gore bears south; thence the course and distance to Minlacowie is E.S.E. 10 miles. Small vessels not requiring more than 15 feet water may, from the position off Corny point, steer E.N.E. $10\frac{1}{2}$ miles, taking care not to bring Corny point to bear westward of S.W. by W. $\frac{1}{4}$ W. until Mount Gore bears southward of S.S.E.; then steer E. $\frac{1}{4}$ N. $12\frac{1}{2}$ miles to Minlacowie.

Anchorage.—A ship of 18 feet draught may anchor in 20 to 22 feet, with the jetty bearing E.S.E., 3 cables distant. There are 24 to 26 feet water 3 cables further out on the same bearing. A vessel drawing more than 10 feet can only approach the jetty by keeping its outer end bearing S.E. by E. $\frac{1}{4}$ E., and 10 feet is the extreme draught of vessel that can be altogether alongside on either side of the jetty. One of 12 feet draught might anchor in 14 to 15 feet, one-third of a cable W.N.W. from the jetty end. A vessel of more than 8 feet draught should not bring the outer end of the jetty to bear south of S.E., or north of N.E., while within half a mile of the shore, to avoid the 9-foot rocks mentioned above.

Any sailing vessel going alongside Minlacowie jetty should let go an anchor to ride-to, in case it becomes too rough to lie alongside. A reference to the positions of the rocks mentioned above,

will show that only a steamer could get out with the wind and sea from the westward.

Port Turton.—The jetty at Point Turton is at the S.E. side of the point, and extends from the shore 300 feet in a N.E. by E. $\frac{1}{4}$ E. direction, being 18 feet above low water, or 10 feet above the mean level of the sea. There are $7\frac{1}{2}$ feet water at the outer end on both sides—on the north side a rock with 5 feet water on it 75 feet from the end, and another with only 2 feet on it (with a 3-foot rock close to the N.W.), 30 feet further in, all of these being close to the jetty; thence to the inner end of the jetty the depth on the northern side is $3\frac{1}{2}$ to $1\frac{1}{2}$ feet. On the southern side there are $6\frac{1}{2}$ feet water 75 feet from the end, $4\frac{1}{2}$ feet 50 feet further in just inside the steps), and 3 feet midway between them and the shore. A rock with only 2 feet water on it lies south 60 feet from the steps. Two rocks with 4 feet water on each of them lie N.W. $\frac{1}{2}$ N. 280, and N.W. 180 feet respectively from the outer end of the jetty. The north side of this jetty is only available for one small vessel drawing about 4 feet; and the south side one of 6 feet draught, if not more than 100 feet long.

With a North or N.W. wind a vessel could not lie on the northern side of the jetty, and if it became strong from those quarters would probably be unable to stop at the south side. The bottom off this port is so rocky that a broken sea gets up very quickly, and as quickly goes down when the wind does. Sailing vessels using the jetty should be prepared to haul off and anchor without delay.

Directions for Port Turton.—From the northward: from one mile S.W. of the south point of Wardang island, the course is S. $\frac{1}{4}$ E., $23\frac{1}{2}$ miles to near Point Turton Jetty. In working to windward in Hardwicke bay, the coast may be approached as near as one mile, or into five fathoms; and a vessel should stand off six or seven miles before tacking inshore. There is less tidal stream near the shore than out towards the main waters of Spencer gulf. From the southward: From one mile N.W. of Corny point large vessels should steer N.E. by E. $\frac{1}{4}$ E. sixteen miles, keeping Corny point bearing southward of S.W. by W. until Mount Gore bears south, then steer S.S.E. $\frac{1}{4}$ E. eleven miles for Point Turton Jetty.

Small vessels not requiring more than fifteen feet water, may from the above position off Corny point shape a course E.N.E. for $10\frac{1}{2}$ miles, or until Mount Gore bears S.S.E.; keeping Corny point bearing southward of S.W. by W. $\frac{1}{4}$ W. until then. From there steer S.E. by E. 10 miles for Point Turton. Ketches with a fair wind may cross the shoals in 10 feet least water, by keeping the extreme of Corny point bearing W. $\frac{1}{4}$ S. until abreast the west part of Souttar point, or keeping slightly southward of the line joining Corny and Souttar points. Keep half-a-mile off the latter when rounding at the west part of Point Turton, the 3-fathom line is only 1 cable from high-water mark, north of the jetty it is 2 cables off, and as the shore bights to the southward it increases its distance, being 1 mile off shore at less than a mile to the eastward of the jetty.

Anchorage.—A large vessel may anchor in 21 to 23 feet water, with the jetty bearing S.W. distant 3 cables, and a small vessel with the jetty in line bearing S.W. by W. $1\frac{1}{2}$ cables distant, in 12 to 16 feet water. *Variation of compass, 4° E.*

117.—AUSTRALIA.—*South Australia.*—*Streaky Bay.*—*Rocks.*—A dangerous rock, named *Dashwood rock*, lies outside the entrance to Dashwood channel, with the following bearings:—Extreme of Cape Bauer, S. $\frac{1}{4}$ E. 6.1 miles; centre of Olive island, S.W. by S. 7.6 miles; hill on Eba island, E. by S. $\frac{1}{4}$ S. 10.9 miles. Dashwood rock breaks only with a heavy swell, is of small extent—about 50 feet across—and has but 9 feet of water over it at low water. There are 6 to 7 fathoms water all round it at $\frac{1}{4}$ mile distance. *Another dangerous patch*, on which are not less than 5 fathoms, lies with extreme of Point Brown, N.W. $\frac{1}{4}$ W. $4\frac{1}{2}$ miles, and the hill on de Mole point, N.N.E. $\frac{3}{4}$ E. $6\frac{1}{2}$ miles. This patch, about 1 cable in diameter, breaks but seldom, and then very heavily, and has from 14 to 18 fathoms all round at a distance of $\frac{1}{4}$ mile. *Variation, 4° E.*

118.—AUSTRALIA.—*Queensland.*—*Moreton Bay.*—*Alterations in Yellow Patch Light.*—The following alterations have been made in Yellow Patch light, Moreton island:—The light (*fixed*) has been improved, and now shows *white* between the bearings S. $\frac{1}{4}$ W. and S.E. by E. $\frac{1}{8}$ E.; *red* from S.E. by E. $\frac{1}{8}$ E. to the fairway buoy (S.E. by E. $\frac{3}{4}$ E.); and *white* from S.E. by E. $\frac{3}{4}$ E. to E. $\frac{1}{4}$ N.

Note.—The seaward white light kept in sight, leads westward of Hutchinson shoal, and north-eastward of the shoal water extending off North banks. When the light changes from red to white, on the south-western edge of the red sector, a vessel will be on the line of Yellow Patch light and the fairway buoy.

Directions.—Vessels approaching Moreton bay from the northward, and entering by Howe channel—with fine weather and smooth water—should, after making the fixed white light on Comboyuro point, be careful not to enter the red sector of Yellow Patch light, until Comboyuro point light is obscured on a S. by E. $\frac{1}{4}$ E. bearing. On Comboyuro point light being obscured, haul gradually to the southward, enter the red sector of Yellow Patch light, and on opening out Comboyuro point light, steer for it keeping on the edge of the white light. When Yellow Patch light comes nearly in line with Cape Moreton light, edge to the westward and open out the fixed white light on Cowan Cowan point, which, bearing S. by E. $\frac{1}{4}$ E., leads westward of Venus bank. Leaving Moreton bay at night, by Howe channel, after passing the line of leading lights for Middle channel, keep on the eastern edge of Comboyuro point light until Yellow Patch light changes from white to red, the vessel will then be in a position north-westward of the fairway buoy, and may at once steer seaward. Attention to these directions will take a vessel through Howe channel in not less than 16 feet at low water; by similarly keeping the eastern edge of Cowan Cowan point light just open, the least water will be 19 feet. Cowan Cowan point light, however, being more distant, is not as good a guide as Comboyuro point light. *Variation*, $9\frac{1}{4}^{\circ}$ E.

119.—AUSTRALIA.—*Queensland.*—*Moreton Bay.*—*Tidal Signal at Brisbane Bar Light-vessel.*—A cone has been substituted for the flag formerly used.

120.—AUSTRALIA.—*Queensland.*—*Pioneer River.*—*Tidal Signals.*—The following tidal signals are now exhibited from the flagstaff at the pilot station, Pioneer river, when vessels require to enter at night:—Red light, for 6 ft. depth of water; green light, for 6 ft. 6 in.; red light over white, for 7 ft.; red light under white, for 7 ft. 6 in.; green light over white, for 8 ft.; green light under white, for 8 ft. 6 in.; red light over green, for 9 ft.; red light

under green, for 9 ft. 6 in. ; two red lights vertical, for 10 ft. ; two green lights vertical, for 10 ft. 6 in. ; two red lights horizontal, for 11 ft. ; two green lights horizontal, for 11 ft. 6 in. ; white light north, red south, for 12 ft. ; red light north, white south, for 12 ft. 6 in. ; white light north, green south, for 13 ft. ; green light north, white south, for 13 ft. 6 in. ; red light north, green south, for 14 ft. ; green light north, red south, for 14 ft. 6 in. and upwards.

121.—AUSTRALIA.—*Queensland.*—*Cleveland Bay.*—*Light at Magazine Island.*—During the construction of a jetty at Magazine island, a *fixed red* light, elevated 15 feet above high water, will be exhibited from the outer end of the works.

122.—AUSTRALIA.—*Queensland.*—*Trinity Bay.*—*Temporary Light on Low Isles.*—Pending the construction of a lighthouse on Low isles, a light is temporarily exhibited from the westernmost Low islet, Trinity bay. It is a *fixed white* light, elevated 40 feet above high water, and visible 8 or 9 miles.

123.—UNITED STATES.—*California.*—*Alteration of Light at Fort Point.*—On or about May 1, 1878, the light at Fort Point, entrance to San Francisco bay, will be changed from fixed white to *fixed white varied by red flashes*. It will show *fixed white* for one minute, followed during the next minute by *four consecutive red flashes*.

124.—UNITED STATES.—*Gulf of Mexico.*—*Mississippi River Entrance.*—*Buoy with Self-acting Whistle off South Pass.*—An automatic (or self-acting) signal buoy has been placed off South pass, Mississippi river entrance. The buoy, painted *black and white* in vertical stripes, and giving frequent blasts of a 10-inch whistle, is moored in 10 fathoms water, with the following bearings, viz. :—Entrance between jetties, N.W. by N., about 1 mile ; South pass lighthouse, N.W. Position approximate, lat. 28° 58' 45" N., long. 89° 8' 0" W. Variation, 6¼° E.

125.—UNITED STATES.—*Massachusetts.*—*Alteration of Light at Eastern Point.*—The light at Eastern point, entrance to Gloucester harbour, Massachusetts, is now *fixed red*, instead of fixed white as formerly.

OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1878.

(*This List is completed to the 18th of each Month.*)

Isabella, wood; built at Sunderland in 1859; owned by Mr. T. A. Smith, of Blyth; tonnage, 217; Dieppe to the Tyne; ballast; lost near Souter Point, February 14, 1878. Inquiry held at South Shields, March 11, 1878, before Yorke, Stip. Mag. Aplin and Ward, N.A. Master to blame for not using the lead when making the land in thick weather. Certificate suspended for three months. Recommended for one as mate during that period.

226. *Chillianwallah*, wood; built at Street Harbour, Nova Scotia, in 1865; owned by Mr. C. A. De Wolf, residing in New York; tonnage, 299; New York to Antwerp; resin and staves; abandoned and lost in December, 1877. Inquiry held at Westminster, March 9, 1878, before Rothery, Wreck Commissioner. Pickard and Beasley, N.A. Casualty due to the wrongful acts of the master in abandoning the vessel without sufficient cause, cutting a hole in the deck, taking two planks from off the carlings of the main hatch, and throwing the pump-boxes overboard, in order that she might the more readily sink. Court would have cancelled master's certificates, but, being granted by the United States and Canadian Governments, had no jurisdiction.

230. *Tabor*, s.s., and *William and Ann*; the former built at Pallion in 1872; owned by Mr. James Westoll and others of Sunderland; tonnage, 520; London to Shields; ballast; the latter built at South Shields in 1837; owned by Mr. W. Watson, of Hartlepool; tonnage, 232; Seaham to Rochester; coals; collision in the Swin Middle, January 25, 1878, when the *William and Ann* was sunk and four of her crew were drowned. Inquiry held at South Shields, February 22, 1878, before Yorke, Stip. Mag. Powell and Nicolas, N.A. Master in default for not indicating to the brig which side he intended to pass, and also for not having caused a good look-out to be kept. Certificate suspended for six months, but recommended for one as mate during that period.

231. *Diana*, s.s., iron; built at Govan in 1849; owned by the Waterford Steam Ship Company; tonnage, 389; Liverpool to Waterford; general cargo; stranded at Bacawn Bridge, east of Hook Tower, January 27, 1878. Inquiry held at Waterford, March 5, 1878, before Col. W. C. Mollan. Powell and Wilson, N.A. Master to blame for running into the land in a fog without using the lead. Certificate suspended for six months.

237. *C. M. Palmer*, s.s., *Ludworth*, s.s.; former built at Jarrow, in 1870; owned by the Tyne Shipping Co.; tonnage, 1,010; Newcastle to London, with cargo and passengers; the latter built at Whiteinch, 1866; owned by Mr. Wm. Green and others of London; tonnage, 304; London to Hartlepool; ballast; in collision near the Bawdsey buoy, off Harwich, February 17, 1878, when the *C. M. Palmer* foundered, and nine persons were drowned. Inquiry held at Westminster, March 8, 1878, before Rothery, Wreck Commissioner. Forster and Parfitt, N.A. Casualty due to default of master of the *Ludworth* for proceeding at too great a speed in thick and foggy weather. Certificate suspended for six months.

236. *Annie Richmond*, iron; built at Glasgow in 1868; owned by Mr. R. G. Sharp, of Maryport; tonnage, 694; Liverpool to Valparaiso; coals; took fire off the coast of Brazil, October 5, 1877. Inquiry held at Liverpool, March 18, 1878, before Raffles, Stip. Mag. Grant and Wilson, N.A. Casualty caused by spontaneous combustion. Master's certificate returned.

239. *Zero*, s.s., iron; built at Glasgow, 1874; owned by Messrs. Glynn and others, of Liverpool; tonnage, 772; Palermo to Valencia; general cargo; lost off the coast of Majorca, February 5, 1878. Inquiry held at Liverpool, April 1, 1878, before Raffles, Stip. Mag. Harris and Grant, N.A. Master in default for not taking cross bearings of Cape Pera and Port Colon lights, so as accurately to determine his position. Certificate suspended for six months.

240. *Moldavia*, s.s., iron; built at West Hartlepool, 1870; owned by Mr. Taylor, of Liverpool; tonnage, 432; the Mersey to Cardiff; water ballast; stranded on Nash Point, February 22, 1878. Inquiry held at Liverpool, March 23, 1878, before Raffles,

Stip. Mag. Harris and Grant, N.A. Master in default for not using the lead during thick weather, and when close to the land. Certificate suspended for three months.

OFFICIAL INQUIRIES ABROAD.

Atacama, s.s.; lost on the Caja Chica Rock, November 30, 1877. Naval Court held at Valparaiso, December 19, 1877. Master and all officers drowned.

Annie Royden; wood; put into Algoa Bay, leaky, December 14. Inquiry held at Port Elizabeth, January 18, 1878. Master quite justified in putting into the nearest port. Certificate returned.

Hampshire, barque; burnt and abandoned at sea, December 23, 1877. Naval Court held at Valparaiso, January 9, 1878. Master and officers exempt from blame.

Rahamany; wood; built at Bombay, 1842; lost at Rutnagherry, August 9, 1877. Inquiry held at Bombay, December 14, 1877. Master in default for not returning to Bombay on discovering that the ship had sprung a leak. Certificate suspended for three months.

Jessie Henderson, schooner; lost on a reef 10 miles north of the island of Rabi, not laid down in the chart, July 14, 1877. Inquiry held at Levuka, Fiji, July 20, 1877. Master and mate exonerated.

Fitzroy, s.s.; lost in Korotoga Passage, on the south coast of the island of Viti Levu, July 14, 1876. Inquiry held at Levuka, Fiji, July 31, 1877. Master acquitted of all blame.

Welcome Home, schooner; lost by drifting on to a reef, after parting from anchorage on the west side of the island of Maraki, Gilbert group, June 5, 1877. Inquiry held at Levuka, Fiji, September 5, 1877. Master exonerated from all blame.

Swansea, s.s.; stranded during foggy weather on rocks near Narribri, December 4, 1877. Inquiry held at Sydney, January 7, 1878. Master in default for careless navigation in proceeding at full speed in a fog. Certificate suspended for two months.

Wheatlandside, ship; stranded on Cape Recife, December 16, 1877. Inquiry held at Port Elizabeth, January 5, 1878. Master to blame in going too close to the land when rounding the Cape. Certificate suspended for three months.

Malta, wood; lost on a reef at Hungary Bay, Bermuda, February 10, 1878. Inquiry held at Bermuda, February 20, 1878, when Court found Master in default and suspended his certificate for four months. The Governor and Nautical Assessors, however, differed from the judgment, and the certificate was ultimately returned.

Tornado, wood; took fire whilst loading in New Orleans, February 24, 1878. Naval Court held at New Orleans, March 4, 1878. Master free from blame.

Loreley, s.s., iron; lost during foggy weather near Scholpen, on the Pomeranian coast, February 19, 1878. Naval Court held at Dantzic, March 12, 1878. Master free from blame. Certificate returned.

Numba, ketch; foundered off Morna point. Inquiry held at Newcastle, N.S.W. Master free from blame.

THE SHIPMASTERS' SOCIETY.



HIS institution is still holding its ground and developing its usefulness. The accession of members during the past few months has really been very considerable, a fact which we have great pleasure in recording.

A new feature in connection with the Society is the arrangement for holding monthly meetings of members for the discussion of nautical matters. These gatherings are to take place on the last Thursday in each month, and probably there are many shipmasters who will be glad of the opportunity thus afforded of discussing matters of professional interest.

It has also been proposed to establish a Masonic Lodge in connection with the Society; and the steps already taken with that object have met with much approval.

It will not be the fault of the Committee or their energetic Secretary if the Society does not grow into general favour amongst the class for which it is intended.

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ADAPTATION OF MERCHANT STEAMSHIPS FOR WAR
PURPOSES.

THERE never was a time in the history of this country when the subject of the efficiency of the Royal Navy occupied a position of greater importance than it does at present, and the question assumes special prominence from the fact of war being possibly an immediate contingency, which, if occurring, would require all the power which the naval branch of our defence could put forth for the protection of our national interests. But, apart from this exigency, there can be no doubt that many causes have of late years led the country to the consideration of how our naval forces really stand as a means for sustaining our *prestige* and protecting our possessions. Of men-of-war ships of the present day little need be said in disparagement, because, whilst mistakes have been made in the construction of particular vessels, many of these mistakes have been to a large extent inseparable from the art of shipbuilding, which, as a progressive science dealing with productions of great magnitude, is exposed to miscalculations in greater degree than probably any other branch of national

industry ; and if the errors in judgment committed by the keenest and most prescient private shipowners of the country were to be acknowledged, probably what had been looked upon as blunders in the construction of ships for the Royal Navy would bear not an unfavourable comparison. The risk, however, which, more than any other, appears to be imminent to the Royal Navy, lies in the fact that the fleets of other nations are fast becoming powerful and reliable ; and, whilst no Navy can numerically approach that of this country, yet there are nations in Europe whose fleets combined would undoubtedly give us enough to cope with. How, then, can we stride a-head as the greatest maritime power, and hold our own against the fleets of the world ? Not by being satisfied with increasing the strength of the Navy proper, which, owing to the prodigious cost of modern war vessels, can only be done in a comparatively small degree. But what cannot be accomplished in that direction can be attained by other means ready to our hand, and that by utilising the steam vessels of the merchant Navy. Before approaching the practical view of this question, it has to be remembered that no nation has so great a wealth of vessels as Great Britain possesses, in the constant accumulation of which there lies a power hitherto untouched and neglected. In past wars our merchant ships have, no doubt, been employed as transports ; not exclusively so by our own country, but also by other nations, who in many cases have been our allies. What is wanted now, however, is a scheme by which the advantages of so vast a fleet of merchant steamers now belonging to this country should be conserved for our own special requirements ; and it is due to our naval authorities to admit that they have recognised the fact that there are now numerous British steamers which, in addition to their adaptability as transports, could easily be converted into cruisers, carrying light guns of long range, capable of defending themselves and protecting commerce, possessing the means of inflicting damage on hostile vessels, and forming altogether a most important and effective auxiliary to the Royal Navy. The plan of the Admiralty, briefly stated, is embraced in what is termed a "select list," under which it is proposed to

include merchant steamers which would meet certain requirements in the direction of increased bulkheads and water-tight compartments, with the object of rendering the ships less vulnerable, in the event of being struck by shot or shell. But, as the recompense offered to shipowners by this proposal would only in the meantime be the nominal equivalent of an official *imprimatur*, it is not to be supposed that a position for their vessels on the select list would form a sufficient inducement for them to make their ships specially suitable for war purposes, simply that such ships might possess a prior right to be hired or purchased by the Government in the event of hostilities. War being only a contingency more or less remote, a more substantial recompense in the shape of a retaining fee, or otherwise, would have to be offered; because it is not to be expected that shipowners, without any other inducement than the prospect of favourable consideration of their vessels on the breaking out of war, would be inclined to incur the expense involved in executing the requisite alterations.

The result of the surveys recently held under the direction of the Department of Naval Construction on numerous merchant steamers, goes to show that a certain number of such steamers either actually do fulfil, or may be made to fulfil, at an inconsiderable expense, the proposed regulation regarding bulkheads, and are therefore eligible to be placed on the Admiralty list. But in the case of other vessels it is found that they have not the desired bulkhead divisions, and they cannot, therefore, be placed on that list without important alterations being made to enable them to fulfil that condition. To alter these ships so as to comply with this requirement, would not only involve a large outlay, but would also interfere with the commercial capabilities of the ships. Some of the vessels would also be rendered less commodious as transports and less satisfactory in point of ventilation—the latter condition being one of great importance, more particularly if the ships should ever be employed in transport work in warm climates. Shipowners cannot afford, and it would be unreasonable to ask them to alter the condition of their ships and to lay out large sums of money upon them unless there is really employment offered, such as to render the outlay

necessary and remunerative. Many of the first-class steamship companies are therefore in this position, that a certain number of the ships of their fleets are eligible to be placed on this list, but that others (and in some cases their best ships) must be excluded, and it is obvious that it would be very disadvantageous for any such company to place some of their ships in a public list, from which, perhaps, the greater number would be excluded. It would appear to be better for such companies to remain outside this list altogether, than to meet the criticism which would ensue in consequence of the rejection of an important part of their fleet. The latter course would necessarily entail criticism also, but their position would thus be stronger as regards the public, than it would be by allowing their ships to be publicly divided into two different classes. In this view of the matter there can be no doubt that, as far as their own business is concerned, the first-class companies in this position can rely on the well-known character of their ships, which have all been built up to the highest standard. In the event of the proposed list being published, the intentions of the Admiralty in respect to such companies are still unknown, but it is questionable whether the publication of such a list would be attended with any advantage, for if acted upon, it would simply enable the owners of those vessels embraced in the select list to combine together for the purpose of raising the rates of hire,—a result which must follow if, in the event of war, the choice of transports is to be limited to a certain class of steamers: but, so far as the Government intentions have been declared, the Admiralty do not intend to limit their engagements to one class of steamers. If such be the case, the publication of any particular list of ships would seem to be out of place, for it would appear inconsistent to gazette certain ships as the transport fleet of the country, and then to engage other vessels, even if the other vessels were more eligible or cheaper. Such a proceeding would be regarded by the owners who qualified their ships for the list as a breach of an implied contract, and the publication of the names of their ships would tend to justify their complaints.

While, on the one hand, the Admiralty are entitled to all credit for endeavouring to adapt the steamers of the Mercantile Marine

for the purpose of national defence and service in time of war, it has to be borne in mind, on the other hand, that merchant vessels can never retain their trade if they have to run the risk of fighting for it, for the simple reason that, if imminent danger of this kind were to be apprehended, the risk would be so great, and the war premium of insurance so high, that passengers and goods would equally take refuge under a neutral flag. No possible reliance on the seaworthiness or armament of our merchant ships would prevent that from occurring. The naval power of the country, may, however, undoubtedly in the case of emergency, be strengthened by the acquisition of a number of the most powerful merchant steamers; but the Admiralty scheme in itself appears nebulous, lacking boldness of conception and a full consideration of the elements necessary for the successful accomplishment of so great a measure, while difficulties of an insuperable character would present themselves in seeking to have the present Admiralty plan adopted by the general body of shipowners. A satisfactory system could only be matured and carried into effect by suitable arrangements being made with companies owning large fleets of well-equipped vessels. Shipowners with but few vessels cannot be expected to possess such facilities of organisation on shore as would be necessary to ensure the continuous maintenance of a comprehensive system in a condition of thorough efficiency, liable at any moment to be suddenly put to the test; nor would they be induced to adopt it and undertake the working of it, even to the best of the necessarily limited means at their command, except under an arrangement offering them considerable pecuniary advantages.

On the other hand, the owners of large fleets of steamers possess facilities bearing upon shore accommodation, official discipline among crews, and other important appointments, which have been called into existence and established by the necessities attaching to the successful working of extensive business, and to the incidence of its daily governing,—all of which facilities and advantages would obviously be invaluable to the nation were they called into requisition by Government in the event of war, or other emergency; and it is therefore only natural to look to such

companies for the effective development of such a system as would prove to be of national benefit.

If Her Majesty's Government desire to establish what may be termed a Naval Reserve of Ships, they should likewise contemplate securing a Special Reserve of Men, trained in gunnery practice,—and a service of such exceptional character could only be undertaken by the large steamship companies, because, as already indicated, it is in the case of such companies alone that an extent of administration and combination, both as to men and material, would be found of sufficient value to render their utilization effectual and of importance, in making them subservient to any immediate wants of Government.

In the event of war, a section of the mercantile steamships of this country, armed, equipped, and manned by trained sailors, would be of paramount importance, not only in protecting commerce and in keeping communication open with non-belligerent States, but also for the purpose of a ready and immediate transport service.

This could be effected by the Government utilising many of the steamship companies of the country, primarily as postal carriers, not limiting the employment of such to a few lines of steamers, but extending postal facilities to an extent hitherto unattained and unattempted,—the Lords Commissioners of the Admiralty having the power, in the event of war or other emergency, of purchasing at a valuation all or any of the vessels of such companies, or of chartering the same exclusively for Her Majesty's service at a rate of hire to be mutually agreed on, with liberty to equip all or any of the vessels with suitable armament; the respective companies maintaining a body of men in number equal at least to one man for every one hundred gross tons of steam shipping owned by them from time to time, such men to be trained to the use of arms, and to be drilled in gunnery practice on board such of the vessels of the Royal Navy as may be stationed at the respective home ports of the companies, and appointed by the Admiralty for that purpose; the said men to be maintained in a state of efficient drill equal to men of the Royal Naval Reserve, and their period of drill, and the division of their time of drill, to

be in accordance with the requirements contained in the regulations of the Royal Naval Reserve,—the expense incidental to the actual training and drilling of the said men as aforesaid, to devolve upon Government, the companies undertaking, on the summons of Her Majesty's Government, in the event of war or otherwise, to relieve all or any of such men from their engagements with them.

In consideration of the performance of all the stipulations and services herein proposed to be undertaken, the companies to be paid by Her Majesty's Government a sum calculated at a rate per ton per annum on the gross tonnage of steam shipping owned or employed by them in such service from time to time, varying with the character and mileage of the postal service performed, the payment to rise with the increase and fall with the decrease of the vessels of their fleet, and in the case of a vessel or vessels added to their fleet, or of a vessel or vessels taken from their fleet by loss or sale, the payment in respect of such vessel or vessels to be calculated at the rate fixed as above, but on a *pro rata* basis determined by the period at which she passed into or out of the company's possession.

Such a system would, on the one hand, give the Government of this country a power which no other country in the present state of things could exert. It would provide an inducement to ship-owners to build steamships suited to naval as well as mercantile requirements, and the retaining fee—substituted for postal subsidies—would, without doubt, be well-spent money, in directly attaching to the service of the State a most powerful auxiliary. Any invidious preference could be avoided by the Government making it obligatory that no company would be treated with unless possessing a certain amount of tonnage, and consequently having a certain number of men ; and, in the event of a reasonable *quid pro quo*, it would then be fair, as a distinct stipulation on the part of the Admiralty, to insist that all ships thus employed should meet certain requirements.

JOHN BURNS.

ON PRIVATEERS.

THE recent announcement that the German steamship *Cimbria* has arrived in a Transatlantic seaport with six hundred Russian mariners on board has created an alarm in the mercantile world, which is out of all proportion to the real importance of the fact, and its significance has been misinterpreted by some persons, as if the event is to be regarded as a preliminary step to Russia ignoring her international obligations to the civilised world under the Declaration of Maritime Law of 1856. By that Declaration indeed, which is embodied in a Diplomatic Act quite distinct from the Treaty of Paris of the same year, respecting which the continuous obligation is at present in controversy, Russia has placed on record, in common with the other signatory powers, her solemn renunciation of the practice of issuing letters of marque at the commencement of a war, authorising private persons to fit out vessels of war at their own expense and to make war on their own account against the enemy of the Crown. "La Course est et demeure abolie" is the first article of the Declaration of Paris, of which the authorised English translation is, "Privateering is and remains abolished." The phrase "privateering" is not altogether an equivalent of the French word "La Course," which is a much more ancient phrase, and which originated at a time when it was not the practice for Princes to maintain permanent military fleets, and when, if they had to make war upon the sea or to conduct any maritime expedition against a continental power, they had to rely on the voluntary aid of their own subjects, who were shipowners, or upon the mercenary aid of the subjects of other maritime powers. For the purpose of utilising in the highest degree all such maritime aid, belligerents were accustomed to offer the *premium* of licensed pillage to all persons who would aid them by sea against the enemy, and we find on record, in the annals of the Prize Courts of our American kinsmen, a judicial decision of so recent a date as 1812, by which it was held that a British subject might lawfully accept a com-

mission from the American Government, as commander of a private armed vessel fitted out to capture British vessels and their cargoes on the high seas. "Such an individual knows his fate, if he should fall into the hands of the enemy," is the language of the learned judge who decided the case (*The Mary and Susan*, 1 Wheaton, p. 46), "and the right to punish in such a case is acquiesced in by all nations. But, unrestrained by positive law, we see no reason," the learned judge continues, "why this Government should be incapacitated to delegate the rights of war to any individual, who may command its confidence, whatever may be his national character." Happily the recurrence of such a case is, for many reasons, an impossibility in the present day, and although the United States of America may not have formally acceded to the Declaration of Paris on the subject of "*La Course*," the United States and Great Britain are under mutual engagements not to allow their respective ports to be used for the fitting out of privateers by the agents of any belligerent power. So far, there is not any just cause for the British merchant to be alarmed, lest the American seaports should be made bases of hostile operations against British commerce on the part of Russian privateers.

The "privateer" by name cannot be traced further back in English history than the reign of Charles II. In modern times the term has come into general use in England and America, as descriptive of every class of war-ship fitted out by private persons, and allowed to carry on war for the private profit of its owners. The system however of arming private ships under this new designation was a step in advance of the earlier system of letters of marque, which was "*La Course*" in the original sense of the word. One of the results of the Crusades had been to accustom the European mariner to greater order and regularity in the conduct of maritime warfare, and the way had thus been paved for a favourable change of practice, which ensued upon the institution of the office of the Admiral, borrowed from the Moorish or Saracenic marine, and of which we have the earliest notices in the book of the "*Consolat del Mar*" of Barcelona. Prior to the institution of the Admiral's office, vessels under the authority of letters of marque were accustomed to cruise to and fro on the high

seas, pursuing every vessel, which they met with, as an enemy's vessel, and being under no obligation to submit their captures to a judicial inquiry in any Prize Court. The first step gained by the institution of the Admiral's office was to bring every armed fleet (armada) under the control of an authority conversant with the proper customs of cruising (*les usages de la Course*), and we find municipal laws enacted by various States in the course of the fifteenth century, the object of which was to oblige all private armed vessels to bring their captures into port for adjudication before some Admiralty tribunal. Privateers accordingly, when they came into use in England, as subsidiary to the Royal Navy in the reign of Charles II., found at once their place as cruisers under the provisions of the law applicable to letters of marque. The Black Book of the Admiralty makes us acquainted with a class of vessels termed "Gallioters" in the reign of Edward III., the owners of which made war on behalf of the Crown without being in the pay of the Crown, and the owners of such vessels were entitled to the property in all prizes, which they made on the high seas, without any deduction therefrom in favour of the Crown. These "Gallioters" were, in fact, "the free lances of the sea." The privateer, on the other hand, differed so far from the letter of marque, that, whilst the latter was only commissioned to plunder the enemy, the privateer was in terms commissioned both to plunder and to make war on the high seas. The privateer was also under more restraint than the letter of marque, as the owners of privateers were bound under heavy sureties to cause all their captures to be brought in for adjudication before a competent Court; whilst the earliest ordinances for the regulation of "*La Course*," which are preserved in the Book of the "*Consolat del Mar*" already mentioned, are silent as to any requirement, that cruisers should submit their prizes to a judicial enquiry before they should deal with them as lawful prize of war.

We should do great injustice to past generations of men, if we were to regard their institutions for the settlement of international disputes as simply barbarous, and as intended merely to regulate the sacrifice of human life and the spoliation of private property, as necessary means to work out corrective justice, where the

State, of which the wrong-doer is a member, refuses to make reparation for injury inflicted upon the subject of another State. On the contrary, if the course of municipal legislation on the subject of the exercise of belligerent rights on the high seas since the time of the crusades be carefully studied, it will be found that there has been a steady progress made from time to time in the interests of humanity, and that with increasing civilization in the arts of peace there has been a concurrent moderation in the conduct of maritime war. The fourteenth century is the period from which we may properly date the growth of a system, under which belligerents came to recognise the sanctity of Treaty engagements applicable to a state of war, and by which limits were set to the inordinate exercise of belligerent power, as hitherto customary in matters of maritime prize.

In the next following century an uniform system of Maritime Prize Law may be said to have obtained general recognition in Europe, England being amongst the earliest to set the example to other States by treaty arrangements entered into with the maritime powers both of the Atlantic seaboard and of the Mediterranean ; and it is to the honour of the British Crown, that it did not concur in the retrograde course, which France and Spain under the sceptre of the House of Bourbon resolved to pursue in the sixteenth and the seventeenth centuries. The famous French " Ordonnance de la Marine " of 1681 was a step backwards in severity as regards its regulations in matters of maritime prize, and the Spanish Ordenanza del Corso, A.D. 1718, rivalled the severity of the provisions of the Ordinance of Louis XIV. The subsequent practice of the First Republic and of the First Empire fluctuated, and it was not until 1854 that the Governments of France and of England resolved to adopt a common platform of maritime prize law. It was on this platform that they took their stand, when a treaty of peace had to be settled at a Congress of the great Powers at Paris, in 1856. France and England on that occasion agreed to invite the Powers assembled in Congress to concur with them in declaring " La Course " to be abolished, and in settling upon an uniform basis certain diversities of practice in matters of maritime prize, " which in time of war had long been the subject of deplorable

disputes." We do not propose to enter, on the present occasion, into the discussion of those other matters, as our space would not allow us to treat them at sufficient length. We shall confine our observations to the legal bearings of the first Article of the Declaration of Paris, under which "the Free Lance of the Sea" has no longer a career open to it any more than the free lance on shore, whose services may be said to have been finally dispensed with, when the Cantons of Switzerland ceased to allow their citizens to earn military pay in the service of the various Princes of Italy, whose sovereign rights are now merged in the common sovereignty of the King of Italy.

It was not the intention of the two great maritime powers of Europe, who had been allies in what may be conveniently termed the Crimean War, to deprive themselves, by becoming parties to the Declaration of Maritime Law, of their right to put forth their utmost maritime strength in any future war. The object of the Declaration was, in the first place, to do away with all uncertainty as to the law; and secondly, to establish an uniform doctrine on the points embraced in the Declaration. It was reasonable to expect that the sense of mutual advantage would dispose the various Powers, who met in Congress, to acquiesce readily in any mitigation of the mode in which belligerent rights might be lawfully exercised on the high seas, which France and England should recommend to them, backed by the experiment, which France and England had jointly made, as allies. Those Powers, indeed, out of deference to each other, had mutually renounced at the commencement of the war certain differences of practice, and had found themselves, notwithstanding such renunciation, to be as capable as heretofore of conducting a maritime war to a successful issue.

It was the first great war in which the application of steam power to maritime navigation had come into play, imperfectly it may be, but sufficiently to satisfy experienced sea-captains, that the privateer would henceforth be practically worthless as an instrument of maritime warfare, except for purposes of pillage, and that naval operations must henceforth be carried on exclusively by vessels, of which the crews should be under military discipline,

and be more amenable to control, than the crews of vessels, intent only on pillage for their own profit, could be expected ever to become. "The Corsair" has accordingly by almost universal consent ceased to be an established institution of maritime warfare. The name of "Corsair" has an ugly sound to an English ear, for Englishmen have long been in the habit of associating it with the past history of those dependencies of the Ottoman Porte on the Barbary Coast, the armed vessels of which, so recently as in the first fifteen years of the present century, claimed a right to make prize of every British merchant vessel which approached their waters, unless it had on board a Mediterranean pass. Those passes indeed, which were procurable at Gibraltar, were in fact tokens of the British vessels having paid tribute, so to say, to the Dey of Algiers in accordance with treaty engagements concluded between Great Britain and that potentate. The bombardment of Algiers by the Allied Fleet, under the command of Lord Exmouth, in 1815, smoked out as it were those "nests of pirates," to use the expressive language of Molloy, which had carried on a perpetual "guerra del corso" against the Mercantile Marine of all Christian Nations, until England grappled effectively with the institution of the Algerene Corsair, which was coeval with the Empire of Charles V., and by force of arms extinguished it. "The Privateer" is but another name for "the Corsair," a younger sister it may be, but undoubtedly of the same family, and tales may be told of the exploits of Christian Privateers, which rival in horrors the ravages of the Moslem Corsairs in the seventeenth century. So much for "the Corsair," and for the meaning of the phrase "*La Course est et demeure abolie*," which has been rendered in English "Privateering is and remains abolished." Endeavours have been made two centuries ago by individual States to discourage the practice of granting commissions of war to the commanders of private ships in the pay of their own subjects, and treaties to that effect have been entered into from time to time, but such treaties were never interpreted to debar the States themselves from taking the ships of their subjects into their own service, and placing them under the command of officers in the public service of the State, and receiving pay from the State.

A question of the proper construction to be put upon the first article of the Declaration of Paris arose in 1870, during the Franco-German war, when the Prussian Government approved a system of volunteering to form a Federal Navy in substitution for the ancient system of granting letters of marque and of general reprisals. Under this new system all German seamen and shipowners were invited to place the services of themselves and of their ships at the disposal of the Crown, the officers and seamen to enter the Federal Navy for the continuance of the war, and the ships to sail under the Federal flag. Certain provisions were also made for the payment of prize money on the capture of enemy's ships, but the captures themselves were to go to the Crown. The French Government was disposed at first to regard this novel arrangement as contrary to the engagements of Prussia under the Declaration of Paris of 1856, and referred the consideration of the question in its bearings on that Declaration to the friendly opinion of the British Government. From the papers laid before Parliament, it would appear that the British Government adopted a view of the question favourable to the conduct of the Prussian Government. The law officers of the Crown are stated by Earl Granville, at that time Secretary of State for Foreign Affairs, to have advised the Foreign Office to this effect: "That there were substantial distinctions between the proposed volunteer force sanctioned by the Prussian Government and the system of privateering, which, under the designation of 'La Course,' the Declaration of Paris was intended to suppress." The law officers say, "That, as far as they can judge, the vessels referred to in the notification will be to all intents and purposes in the service of the Prussian Government, and the crews will be under the same discipline, as the crews on board vessels belonging permanently to the Federal Navy. That being so, and as long as it continues to be so, the law officers consider that Her Majesty's Government cannot object to the decree of the Prussian Government as infringing 'the Declaration of Paris.'" We consider this to be a sound exposition of the legal bearing of the first article of that Declaration, on the facts connected with the arrival of the German steamer, *Cimbria*, at South-west Harbour, on the coast of Maine. The

arrival of that vessel is quite consistent with a present intention on the part of Russia to conform herself to the Declaration of Paris, in case the settlement of the Eastern question cannot be accomplished without war arising between herself and Great Britain. If Russia should purchase for the State powerful steam vessels in American or other foreign ports, and should man them with officers and crews in the service of her Government, her so doing would be no infringement of the Declaration of Paris. It might happen indeed that her so doing at any time after war has arisen between herself and Great Britain, might be inconsistent with the neutral duties of the United States, if such vessels are sought to be fitted out in American ports. There is no reason, however, to suppose that the Russian Government would do anything to involve the honour of the United States, or that the United States would fail to exercise "due diligence" in maintaining their neutrality in accordance with the "three rules" of the Treaty of Washington. It has been well said by various organs of the American Press, that both the Government and the people of the United States would regard with high disfavour the use of their ports for the fitting out of privateers by one of the very Powers, which, at the Congress of Paris, in 1856, agreed that the right of privateering should be for ever surrendered.

TRAVERS TWISS.

OUR COMMERCIAL RELATIONS.—GERMANY.



OUR commercial relations with Germany, so far as they are governed or regulated by treaty, must be regarded as depending on those engagements which England has within the past half-century entered into with those States which now form constituent parts of the German Empire. With Prussia, with the Hanse towns, with Hanover, with Mecklenburg Schwerin and Mecklenburg Strelitz, and finally, with the States of the Zollverein, England has concluded treaties

which still exist, and which it would seem only require to be welded together in a comprehensive instrument setting forth the relations in which England and the German Empire desire to stand towards each other in matters of commerce and of navigation. Let us cast a cursory glance at some of these existing treaties.

Amongst the earliest, if not, in point of fact, the earliest treaty of reciprocity entered into by England with any foreign State, was with Prussia. It had been preceded by a comparatively unimportant arrangement respecting the Ionian Islands, entered into on the 3rd of July, 1815. On the second of April, 1824, England concluded a treaty of reciprocity with Prussia. This was a treaty of commerce and navigation, providing reciprocally for national treatment, and was at the time, and for the time in which it was concluded, considered a great achievement. In 1865, another arrangement was entered into, but which does not seem to have varied the conditions of the previous treaty; and to this a few years subsequently the States of Lubeck, Mecklenburg Schwerin, Mecklenburg Strelitz, and Lauenburg, gave in their adhesion. In 1825, Hamburg concluded a reciprocal treaty with England, by which national treatment was stipulated for. This was followed in 1841 by another treaty with Hamburg and the Hanse towns, relating to the indirect trade. In the same year was concluded a similar treaty with Hanover, since expired, and then followed the treaty with the Zollverein of the 30th of May, 1865, which is perhaps the most important of our commercial engagements with the German States. That is a treaty of reciprocity, and contains a stipulation for favoured nation treatment. In the incorporation of the German States with the German Empire, there does not appear to have been any disturbance of these arrangements and the obligations they entail. The States absorbed into the German Empire as the result of the war of 1866, appear to have been taken over "*in globo*" as the lawyers would say, and the treaties outstanding would still remain as engagements sanctioned by the Government of the Empire, until, at least, a better arrangement might be arrived at. Our present trade with Germany is reckoned by millions. The main channels through which that trade with Western Nations, but more particularly with Great Britain, is

prosecuted, are the Scheldt and the Rhine by means of the railway systems extending from Antwerp and Rotterdam inwards, the Weser, the Elbe, and the Oder. We say nothing of the Danube, because although to all intents and purposes a German river, our trade interests in that stream are bound upon the export trade. Our ships as a rule go to the Danube ports in ballast and return with cargoes of grain, seeds, &c. But the great actual channels to the westward which lead into the heart of Germany form the arteries of commerce through which the oversea trade passes into that country. We may take the British trade with the port of Hamburg as affording one, and perhaps apart from any general statement of the German trade, the best criterion of the extent of our commercial relations with the German empire. According to the latest official return of imports from the United Kingdom, that trade was valued in 1876 at £25,504,319—a considerable decline, it is true, upon the trade of five years ago with Hamburg, but still a large and very important branch of our commerce. These imports include all the great staples of this country, viz., articles of food, building materials and fuel, raw produce, yarns, &c., textile fabrics; other manufactures, coin and bullion, which latter imports rose in 1872 to £10,493,890, but declined in 1876 to £3,436,516. This difference, which can hardly be regarded as indicating any decline in our commercial transactions with the principal port of Germany, would account for the apparent decrease in the import trade with Hamburg as between 1872 and 1876. There appears to be on the period a reduction in the value of the raw materials imported from this country, but by no means sufficient to afford any indication of a substantial decline in our trade with the leading northern port of Germany. Passing on to Swinemunde and Stettin, the gateways of the River Oder, we find that the total tonnage of British vessels arrived at Stettin in 1876, showed an increase of 5,939 tons, or 3·47 per cent. over the tonnage of 1875, and 16,237 tons, or 10·11 per cent. over the average arrivals of the preceding ten years, while at Swinemunde the total tonnage of British vessels in 1876 was 23,822 tons, or 39·7 per cent. more than in 1875, and 26,095 tons, or 46·62 per cent. more than the decennial average. The total at both ports being 17·12 per cent.

above 1875, or 19·54 per cent. above the decennial average. We quote these figures from the official reports, and we might multiply quotations of the statistics of trade and navigation at Dantzic, at Memmel, at Königsberg, and at Bremen, which would show on the whole corresponding results. The general conclusion to be arrived at from a consideration of these statistics, so far as they go, is, that the condition of our commercial exchanges with Germany must be regarded on the whole as satisfactory. But there is wanting, as it seems, some comprehensive arrangement by which all the outstanding engagements between Great Britain and the States which now compose the German Empire would be consolidated, and reduced to a harmonious entirety. Our exports to Germany within from 1872 to 1876, have declined in value more than thirteen millions sterling, while the imports from Germany to the United Kingdom during the same period have increased in value nearly two millions. And although what the economists call the balance of trade has been against Germany and in our favour on the period—that is, that we have sent Germany considerably more than Germany has sent us in return in the shape of exchangeable articles, yet it may be doubted whether we have had the best of the trade for the past five years, or whether the advantage is with us now. But however this may be, our commerce with Germany is sufficiently important to be taken under the sanction of a treaty—supposing such sanction to be in any way necessary for the protection of our tradal relations. The disposition of the Governments of the German States, and, since the unification of the Empire, of the Government of Berlin in commercial matters, cannot be called illiberal, but there are local interests in the German ports which it is necessary to propitiate or to extinguish. Instances of this nature have recently occurred, but it is fair to say that they do not exhibit any desire on the part of the central Government of Germany to set up or support subordinate interests at the expense of those of the general commerce of the country. Some umbrage has been taken by the Germans respecting the operation of the provisions of the Merchant Shipping Act of 1876, relating to timber deck loads. The complaints on this subject from Memel and from Königsberg were, for a time, bad, but they seem to have

greatly subsided. The Memel merchants and shipowners maintained that their ships were built purposely for carrying deck-loads, and are more safe, as they maintain, with a moderate deck-load than without. Moreover, it was asserted that most of the Memel ships had, in consequence of our law, been disadvantageously altered, that the crew would suffer, and that the loss of life would be greater than formerly. The Königsberg people on the other hand appear to take a more rational view of the requirements of our law. They know that the German flag in British ports is on the same footing exactly as the British flag, as the British flag is on the same footing as the German flag in the ports of Germany. The Germans do not hesitate to compel British ships to obey German laws in the German ports, and they are too thoughtful and too sensible a people to suppose that they should deny the exercise of a right to a foreign State which they insist upon in their own case. It is admitted that in the case of German ships, whether timber laden or grain laden, the provisions of the Act of 1876 have been already effectual in saving life and property. "There can be no doubt," writes Her Majesty's Consul at Königsberg in a recent report to the Foreign Office, "that the precautionary measures required by the Merchant Shipping Act have done good. Several foreign vessels laden with grain which have sailed from Königsberg-Pillau, and for which no particular observation during the loading has taken place, have been lost from the shifting of the cargo, but not one British vessel has been lost from that cause since the surveys during the loading have been instituted." They who are acquainted with the productions and requirements of Great Britain and Germany, and the large amount of exchange which goes on between the two countries, will be at no loss to recognise the solidity of the foundations on which our commercial relations with Germany rests. Germany takes all our great staples; we take from Germany in return, provisions, grain, cattle, horses, sheep and lambs, swine and hogs, to say nothing of the various other articles which figure in the annual statement of trade and navigation. Our trade with Germany is indeed a great and solid branch of the national commerce, and it would be no light disagreement

respecting tariff arrangements which would be suffered seriously to embarrass it. If, as we have already said, we are to have a commercial treaty, it should be a comprehensive one which would include and consolidate all existing obligations contracted with the German States. But the necessity for such a treaty is not imminent, and it may be hoped it will not be entered upon without careful and adequate consideration.

H.M.S. "INFLEXIBLE."

WE suppose by this time that the controversy on the stability of the *Inflexible* may be considered to be practically at an end, and, as at its commencement we* attempted to place before our readers the questions in dispute, we now propose to summarize the Report of the Committee, and to endeavour to ascertain the practical outcome of the enquiry. One result of it, of course, is that all the world knows all about the ship, and what mode of attack upon her would be most likely to succeed; and even the Committee of Enquiry have been good enough to suggest that "probably the most effective mode of bringing a destructive shell-fire upon the *Inflexible* would be by a flotilla of gunboats concentrating their fire upon her."

The Committee appointed by the First Lord of the Admiralty were requested to direct their attention to three questions :—

1. As to whether the vessel was liable to have her unprotected ends completely penetrated and water-logged, and their contents cleared out by shell-fire early in an engagement.

2. Whether there would be serious risk of her capsizing were this to happen, and could she be so repaired as to be able to reach some port?

3. Whether, all points considered, the ship is a safe sea-going vessel? and "whether, when the amount of damage to which her unprotected ends would be exposed in action is borne in mind,

* See *Nautical Magazine* for August, 1877, in which is given a detailed description of the vessel.

sufficient provision has been made to ensure, in all human probability, her safety under such conditions?"

The pith of the enquiry obviously lies in that part of the last question which we have given *verbatim*. We shall not trouble our readers by any remarks as to what has been said as to the competence of the Committee. It consisted of Admiral Sir James Hope, Dr. Woolley, Mr. G. W. Rendell, C.E., and Mr. W. Froude. Sir James Hope has in his time been a Dockyard Superintendent; Dr. Woolley has made important contributions to the theory of naval architecture; Mr. Rendell is an authority on questions of ordnance; and to Mr. Froude we are indebted for most of the science treating of the rolling of ships at sea. It may be added that Dr. Woolley had, in a letter to the *Times* at the time of the commencement of the controversy, appeared to have an unfavourable opinion of the vessel's stability. The Report of the Committee was signed by all four members.

The first of the questions is obviously one of gunnery, and the Committee give as their opinion that the cork and stores in the unarmoured part of the vessel would not be cleared out in any such engagement as might be anticipated. They first say that the gutting of the unarmoured compartments can only be effected by a large number of blows uniformly distributed. Could the enemy deliver such blows in a naval engagement? Sources of error are found in the motion of the vessel herself and of her enemy, the smoke, the rolling and pitching of both vessels, the imperfect knowledge of distance and the action of wind upon the shot. All these influences come in and constitute important drawbacks when we attempt to estimate the effectiveness of guns from data derived from target experiments. The especial action of shell fire upon the unarmoured structure, more particularly upon the cork, is next gone into in detail. The belts of cork, whose efficiency has been the subject of much controversy, are four in number, one on each side of each of the unarmoured ends of the vessel. They are each about 63 feet in length, 4 feet thick, and extend from 7 feet below water to 5 feet above it. As a matter of fact the shells would not explode in the cork, but directly after passing through it; the ignition of the bursting charge commencing

when the shell strikes the ship, but taking a sensible time to complete, so that the explosion would take place after the shell had passed through the cork, and thus would have but little effect upon it. For this reason the Committee are of opinion that the cork chambers are liable to be riddled but not gutted. We cannot think that much can be made of this point, that is, that the enemy's shell might be relied upon to explode after passing through one side of the ship and before reaching the other side, since it would be easy to construct shells in which the time of ignition should be slightly prolonged, and thus each shell, after riddling one cork chamber, would do its work towards gutting the other. It would appear, as the Committee point out, that the most effectual assailant of the *Inflexible* would be a fleet of small vessels concentrating their fire upon her. They show that an ironclad less heavily armoured than herself, and necessarily carrying but a small number of guns, would stand but a poor chance against her. It appears then that the *Inflexible* could sink any other ironclad without being exposed to sensible injury by her, and is only liable to danger from the attacks of a large number of small vessels, a considerable proportion of which would be exposed to inevitable destruction by her heavy guns. No enemy would care to expose valuable ships to certain destruction for the chance of merely injuring one large ironclad; and if it should turn out that the enemy will attack her with swarms of gunboats, at the worst we must also be prepared with a number of similar vessels. It has always been a maxim of naval warfare that like must be opposed to like. In the old wars a lack of frigates could not be compensated for by an excess of liners, and so we shall find that, while the first of naval powers must have monster ironclads with heavier guns and thicker armour than her enemies, she must also meet their small vessels by similar small fry. As against forts, the Committee remark that the *Inflexible* could choose her distance so as to be out of the reach of light guns, and at the same time be able to use her own heavy guns of long range. A contemporary has made much out of the disadvantage to which she would be exposed in running through the Dardanelles or Bosphorus, where the enemy could bring any number of light guns to bear, while

such a vessel as the *Dreadnought*, which has armour all fore and aft, would be safe, because there are *at present* no guns which could pierce her armour. It would, we think, be very bad policy to design ironclads with a view to their being able to force the Dardanelles while the present guns are there. If we have such ironclads so much the better; but we must remember that any Power holding the forts has only to get larger guns capable of piercing the *Dreadnought's* armour, and then a few shots will sink her. For being able successfully to attack forts by ships we must be dependent upon the temporary accident of the forts not mounting heavy guns, there being of course no limit to the weight of ordnance which can be mounted in a fort. In any war we should probably be able often to gain advantage from our enemy's deficiency in heavy weapons; but such a condition of things could not be long counted upon, and certainly could not be made an element in the designing of large ironclads.

The second part of the inquiry is, as to the extent to which the *Inflexible's* stability would be lessened supposing her unarmoured ends to be gutted. The Committee say on this point:—"We find that under the extreme conditions assumed, the ship, even without water ballast, would yet have stability, and would therefore float upright in still water; and we are of opinion that the stability she would have in that condition, though small, is in consequence of the remarkable effects of free internal water in extinguishing rolling sufficient to enable her to encounter with safety waves of considerable magnitude. The ship, under these circumstances, however, would require to be handled with great caution."

They further show that but little would be gained by the admission of water ballast, the ship being, indeed, safest with but a moderate amount of it. While considering that the vessel would in this condition be safe as against the action of the waves, she would be in a critical position if still in presence of a powerful enemy. She could not be so readily manœuvred as to ensure her against being rammed, and her reserve of stability would be so reduced that a blow from a ram or a torpedo attack might prove fatal. Her guns also could only be worked with great caution. It should be noted that these conclusions have been arrived at as

the result of intricate calculations involving masses of figures, and careful and extensive experiments. We may mention the experiments to determine the angle of heel (when turning) of the *Thunderer*, described in an interesting appendix, and also experiments made on a model with the special object of ascertaining the result which would be produced on a vessel having a hole in her bow by which water would be admitted into a large fore compartment and steaming at various speeds. It was found that the vessel's stability would not be dangerously affected thereby except at such a speed as she was not likely to reach with the full power of her engines when in such a condition as we have described.

The second clause of this question is summarily dismissed by the Committee: they think nothing effective could be done by way of repairs at sea. Perhaps this was the safest conclusion, as we really have so little experience of naval warfare with iron ships that it is almost impossible to form any opinion upon a question which resolves itself into one of practical experience.

With reference to the third question, the Committee come to the conclusion that—"It cannot be said that the armoured citadel is invulnerable, or that the unarmoured ends are indestructible, although the character of the risks they run is different. But in our opinion the unprotected ends are as well able as the armoured citadel to bear the part assigned to them in encountering the various risks of naval warfare, and therefore we consider that a just balance has been maintained in the design, so that out of a given set of conditions a good result has been obtained." It is now a trite remark that in a war-ship we can only obtain excellence in one particular by making sacrifices in others. The limit of length compatible with handiness in turning was reached fifteen years ago in the *Minotaur* class, and the limit of size altogether has probably been nearly attained. There is also an important consideration as regards armour penetration, viz., that with heavy guns length of range makes little difference in the power of penetration. Thus the Committee state that targets with armour 22 inches thick have been pierced by shell from existing guns at a range of 2,000 yards. Thus if any part of a vessel is to be armoured so as to enable her to meet the fire of existing guns, the

armour must be 24 inches thick at least ; and the size of the vessel being restricted, thick armour can only be carried by reducing the area of protected surface. This has been done in all our recent ironclads, but not to so large an extent as in the *Inflexible*. In her case an attempt has been made at protection against shot by other means than armour — partly by cork, which it is thought would only be displaced very slowly and by long continued fire, partly by very extensive sub-divisions into watertight compartments. All our new ironclads, and also the unarmoured cruisers, have been thus partitioned by bulkheads and flats, and this has been their only security from total destruction by a torpedo attack. There is, however, the drawback that while extreme sub-division may save a ship from sinking, it may, under some circumstances, become the cause of a fatal loss of stability. All ships are exposed to this danger from torpedoes : unarmoured cruisers are liable to it from a few well-directed shot from ordinary guns : all our ironclads, except the *Inflexible*, may be similarly endangered by a few shots from the heaviest existing guns : the *Inflexible* is exempt from such danger unless her adversaries can hit her a very great number of times and can well distribute their blows ; and the report of the Committee goes to show that even when this is done her loss of stability is not so much as to expose her to danger from wind and weather if she be cautiously handled.

The Committee close their report by recommending some alterations in the *Inflexible*, and some improvements which they think may be adopted in future vessels of similar character. They propose to extend the cork chambers to the extreme ends of the vessel, to reduce the travel of the guns on their slides, and to make such alteration in her machinery as would cause a larger proportion of it to be available for pumping. They also suggest that further experiments should be made with a view of ascertaining the best material for filling the cellular structures, which they consider must form an important feature in the ironclads of the future. Further, they state as their opinion derived from recent experiments, that a vessel might have the same speed as the *Inflexible* with much greater beam, provided her ends were fined

so as to give the same displacement, and then the vessel, when the unarmoured ends were gutted, would have her range of stability materially increased.

One result of the enquiry not mentioned by the Committee in their Report is, that the completion of the *Inflexible* has been delayed some six months. Let us hope that affairs in the East will be so settled that we shall not need her services.

DIBDIN AND HIS SONGS.

THE name of Charles Dibdin is so imperishably associated with that lyric poetry which during the latter half of the last, and far into the present century illustrated our nautical character and manners, and fired the enthusiasm of our sailors, that no apology is needed for a reference to such a man in the pages of a periodical devoted to maritime affairs. "Give me the making of the national ballads and you may make the laws" was the saying of one who understood human nature well, and never was the aphorism more strictly applicable than to the songs in which Dibdin has set forth the grandeur of the maritime strength of England, and the noble characteristics of the men by whom that greatness was achieved.

The author of those songs and the subject of this sketch, was born at Southampton, on the 15th March, 1749. He was sent to Winchester to school, and whilst there is said to have studied music under Kent, who is known to us as a writer of anthems; but according to his own account he never received a musical education at all, and it is certain that to the end of his life his knowledge of the art was but superficial. Still, he believed himself to be a good musician, and even at one time gave lectures on the science of thorough-bass; but his lectures failed, for he could not teach what he did not know. He thought a great deal of Arne and Corelli, and studied the scores of the latter so greatly to his own satisfaction, that he says he was enabled to see the working of Corelli's mind, and to fathom the utmost intricacies of harmony. Fortunately for the style of composition he aspired to, but little

theoretical knowledge was required, and if he had not ten talents, he did not allow the one he possessed to remain idle. His compositions both as a poet and as a melodist show him to have been of "most excellent fancy," and as a lyric poet, he deserves and must hold a place in literature. From a boy he had a faculty for writing verse of no mean merit, chiefly with reference to the country and to rustic life. He is familiar with the shepherd on the hill side, with Lubin at the fair, the village maid and her soldier lad, the sailor parting from his sweetheart, and numberless other little incidents which lent a charm to the simplicity and sincerity of country life. He is homely yet beautiful, free and unfettered, and speaks directly to the heart. He loves tenderly what is loving, and always upholds whatever is noble and manly—these are his distinctive characteristics as a lyric poet. It is true that fault may be found with the rhythm of much of his verse, but he wrote in an unstudied manner, and not the least charm of his compositions is that he gave to the world his emotions as he felt them, with the true eloquence which is always spontaneous, and never appeals in vain.

Dibdin did his country good service by the excellence and number of his sea songs and also by his poetry about the sea. Such words as the following ring with thorough manliness and that lofty spirit which regards right as the only true might:—

Ye freeborn sons, Britannia's boast,
Firm as your rock-surrounding coast,

Ye sovereigns of the sea,
On every shore where salt tides roll,
From east to west, from pole to pole
Fair conquest celebrates your name,
Witnessed aloud by wondering fame,
The lads who dare be free.

Mistake me not, my hearts of oak,
I scorn with liberty to joke;

Ye sovereigns of the sea,
Assist, uphold your Church and State,
Your great men good, your good men great;
Awe all abroad, at home unite,
And jolly join in faction's spite,

Then, then, my friends, you're free.

When we consider that Dibdin was never at sea, that he spent

a great part of his life in the neighbourhood of a suburb of London, that his associates were theatrical managers and music-publishers, and citizens of London generally, we are not a little surprised to find him so conversant with sea life in all its phases. Some critics have discovered nautical errors in his sea songs, but sailors have not, and they are surely good judges of their own craft. He composed an immense number of songs, and always wrote the words for them; in fact he was a rare instance of the true bard. Though the words of most of his songs are excellent, forcible, and highly characteristic, they lose half their power when taken apart from the music, as also does the music away from the words. Taken together we may fairly say they are unmatched; and the fact that most of them are as popular to-day as they were a hundred years ago is the greatest proof of their intrinsic merit. Of all his songs we consider, as no doubt most people do, that "Tom Bowling" is his best. There is something very touching about the origin of this song. Dibdin had a favourite brother, Thomas, who was captain of an Indiaman. It was the death of this brother that he wished to remember, for he loved him as a greater poet loved Jonathan. As perhaps he felt greater sorrow for this brother than for aught else, so it seems natural that "Tom Bowling" should be his best effort. A tribute of love, it is fresh and beautiful as the flowers which, tended by loving hands, bloom upon some unforgotten grave. We give a description of Dibdin, for which we are indebted to his biographer Hogarth:—"A handsome man, of middle size, of a very gentlemanlike appearance and address. His costume was a blue coat, white waistcoat, and black silk breeches and stockings, and he wore his hair, in the fashion of the day, profusely powdered. He was near-sighted, and when seated near the instrument he would bend his head close to the book for a few moments, and then, laying it down, throw himself back in his chair and deliver his song, without further reference to book or music." He lies in the cemetery of St. Martin's, near Camden Town, and the words of his best song form his epitaph:

"His form was of the manliest beauty,
His heart was kind and soft;
Faithful below, he did his duty,
But now he's gone aloft."

We offer these brief references to Dibdin's genius, as a tribute to the memory of one of the few men who knew how to strike a chord in the national heart, which met with instant response, and continued to vibrate long after the hand which produced it was motionless for ever. His sea songs are not for any particular generation. They survive the changes which have taken place in navigation and in nautical affairs, and are, so to speak, incorporated with the maritime history of the country.

CUSTOM HOUSES.—X.

THE point reached in the comments made upon this subject seems to compel the expression of a few thoughts on the policy pursued in the levy of English Customs' dues. A very few words will suffice. It is obvious to the merest tyro in fiscal science that the domestic welfare of a nation must depend, to a very large extent, upon the kind of mind that directs its financial affairs. The maxim of Micawber, that, according as expenditure is kept within the limits or not of revenue, so is happiness or misery the unfailing corollary, is as true in national as in individual experience. But, as the area is extended, so is it found that there are generalisations of the principle, and ramifications of it too, little thought of in the restricted sense. For instance, in national finance it is not merely a question of keeping the expenses within the amount of taxation, but there is the difficult problem of so apportioning the amounts as to do substantial justice to all classes alike. Adam Smith and his disciples have adopted the following formula:—

"I.—The subjects of every State ought to contribute towards the support of the Government as nearly as possible in proportion to their respective abilities, that is, in proportion to the revenue which they respectively enjoy under the protection of the State.

"II.—The tax which each individual is bound to pay ought to be certain, and not arbitrary. The time of payment, the quantity

to be paid, ought all to be clear and plain to the contributor, and to every other person.

“III.—Every tax ought to be levied at the time or in the manner most likely to be convenient for the contributor to pay it.

“IV.—Every tax ought to be so contrived as both to take out and keep out of the pockets of the people as little as possible, over and above what it brings into the Public Treasury of the State.”

In so far as the Customs is concerned at the present time, it may be said of the first proposition, that it is nearly fulfilled as far as human ingenuity can reach; for, being indirect taxes on commodities, the people contribute according to what they consume; regarding the second proposition, it may be affirmed that the conditions are equally well obtained, for the tariff is limited, easily understood, and decisive. Owing to the warehousing regulations, the third one is also pretty nearly achieved: but, in regard to the fourth, although the percentage of collection is comparatively low, it is a grave question with financiers whether it could not be better fulfilled.

In the sequel it is hoped that a little more light may be thrown upon this branch of the subject, more especially with reference to amalgamation with the Inland Revenue Department.

In Burn's *Justice of the Peace* the following sentence is worth quoting, in regard to the importance of the question of considering the mode of levying duties, whether Customs or Excise. He says: “As two sources of revenue, far more productive than any other, and as very materially affecting foreign as well as inland commerce, the laws and regulations relating to the duties of Customs and Excise are entitled to the first and principal attention of every legislator, with the view to the introduction of judicious regulations; and of all lawyers, and particularly of justices of the peace, the latter having important duties and powers of enforcing regulations affecting Customs and Excise.” He then goes on to explain the incidence of each branch upon the community, showing the former to affect goods imported and exported (the latter now no longer levied), and the Excise to rest upon inland trade.

To summarise the divisions of taxation generally, it may be said that they are resolved into the following heads :—

- a. It is direct or indirect.
- b. It rests on imports or exports.
- c. It may be on many or few articles.
- d. It may be on the luxuries or necessities of life.
- f. It is on raw materials or manufactures.
- g. It may be discriminating between countries.
- h. It may be protective, prohibitory, or “free.”
- i. It may be assessed at high, low, or medium rates.
- k. It may (as it is in the case of the Post Office) assume the shape of doing work for the public at a profit.

Now, looking roundly at these principles of taxation and subdivisions, what is the policy of the English Custom House, in the past, down to the present time ?

It may be said of the early history of our Customs' dues, and for centuries later, that the Legislature seemed to feel its way to a right system. Not, perhaps, till the “physiocrats” had been “snuffed out,” in the latter part of the eighteenth century, did our statesmen understand what was the truly wise way to adjust taxation, so as fairly to influence for good the wealth, happiness, and even the morality of the people at large. But with the advent of the modern system of political economy a new light seemed to dawn upon the age ; and now-a-days we are reaping the fruit of those great, because true, principles.

The first, or early, “Maritime Customs” in England were mostly levied upon exports, *e.g.*, leather, wool, and woolfells. It is rather a tempting thing for the inexperienced financier to persuade himself and the people at large that in levying duties on goods which are going into the hands of foreigners, the home population are freed from the impost, because their customers have “to pay the piper.” But this is a delusive idea, for if a nation is, like the English, a bartering nation, the country trading with it may retaliate by imposing duties on the goods exchanged. Our modern system of free trade is a standing protest against the idea ; but it was not till some quarter of a century ago that we could shake off the idea altogether. Having pursued the

"export" notion, our early statesmen gradually adopted the principle of assessing all and sundry, both out and into our ports. This plan continued till Sir Robert Peel gave it the *coup de grace*. Of course, necessities of life, as corn and cattle, came in for a share of the taxation, as well as the luxuries of an improving civilization. But Cobden and Bright dissolved that illusion, after a severe contest with a deeply-rooted prejudice; and the "repeal of the Corn Laws" ensued. Glancing at the tariff of 1837-8, it will be found that the duty on importation of wheat was £1 5s. 8d. per quarter, if under 62 shillings market price, a sliding scale of one shilling being added or deducted according to the ruling price. At present, the duty is *nil*. Cattle were prohibited to be imported under that tariff, and cheese was assessed at 10s. 6d. per cwt. Brown or Muscovado sugar was three guineas per cwt. Both of those two latter articles are now free, and importation of cattle is only prohibited when they are diseased. Duties charged upon the necessities of life fall unequally upon the people. The labouring classes are fearfully handicapped. As many of them have only enough to keep body and soul together, and, as they have naturally the same appetites as the rich, it is obvious, if all taxes were raised from such a source, the oppression on that class would be great. With "luxuries" it is different. Whoever can afford to buy them can afford to pay the duty, and, hence, our modern statesmen have wisely laid the burden of taxation, especially of Customs, upon them. It may be said that this violates the first principle laid down by Smith, but then, it must be borne in mind, that luxuries, *e.g.*, spirits, tobacco, are largely consumed by the labouring class as a whole; and, further, some "necessaries"—so called—such as tea and coffee, still bear a share of the impost. Another feature, as shown above, was the assessment of raw material for manufactures and manufactured goods themselves. For example, in the tariff of forty years ago, raw silk was charged one penny per pound, and certain manufactures of it as high as £30 per cent. *ad valorem*. A variety of levies was made upon timber according to size, and some of them were exceedingly high. The present system admits both free. Other instances could be given, but these will suffice as specimens. It

is obvious that such assessments must cripple trade to a large extent. The increased price of materials limits the power of the capitalist and manufacturer to invest, and he, of necessity, cannot employ the same amount of labour which he could under an unrestricted plan.

There is another very important feature to notice with regard to the policy pursued in assessing Customs' duties, and that is, the scheme of imposing high, low, or medium amounts. From time to time all three have been tried, and doubtless it has been found, as shown in the tariff of to-day, that some consideration is required. If too high a duty be charged, even upon luxuries, it may be found that the end—the obtainment of a certain estimated amount of revenue—may be defeated. For instance, in the case of spirits. The duty is now 10s. 5d. per gallon upon brandy; but, if the Chancellor of the Exchequer had increased that sum this year instead of assessing tobacco and the income tax, the probability is that he would not have got a penny more of revenue. A case in point which occurred is the following. On an average of four years up to 1807, the brandy and geneva imported were 1,820,000 gallons, at 14s. each, yielding £1,370,000. In 1814, the duty was raised to 18s. 10d. per gallon, and the average of four succeeding years fell to 742,000 gallons, yielding only £825,000. In 1736, a tax of 20s. was imposed on all spirits, with heavy penalties for evasion. In two years, 12,000 persons were convicted of smuggling, and the measure was so odious to the people, that it had to be given up after six years trial of it. On the other hand, we see in the reduction of the duties on tea and coffee what large increase of consumption takes place, whenever it has been tried. In 1824, the duty on coffee was 1s., 1s. 6d., and 2s. 6d., according to place of production, and the revenue yield £420,988. In 1825, the duty was reduced one-half. In four years the consumption was more than doubled, the duty realised in 1828 being £440,245. Similarly when the duty was reduced on tea, in 1857 and 1863, the recoupment, by increased consumption, was something astounding. The policy of charging a moderate or medium duty upon luxuries, with reference to the capacity of the people to bear the imposition, and a low duty upon "necessaries" seems

to be the right thing to do. This appears to be the secret of the success of modern financial measures, and the spring of the motive of our national purse holders. Regarding prohibitive, prohibitory, and discriminating duties, in the annals of the English Custom House, little need be said. Every tyro, whether Tory or Whig, will admit that protection is dead. A Report of the Committee of the House of Commons, in 1840, settled that system, and "laid its ghost" for ever. In 1842, as a consequence, "protective duties so-called were largely reduced; and so far back as 1825 the old scale of "prohibitory" duties was extinguished. As for the discriminating class, which means a differential scale as applied to different countries, it may be said to still exist in one particular. That is the difference of amount charged upon certain imports *into* the Isle of Man, as compared with the rest of the United Kingdom. But in so far as the discrimination, which formerly existed, between the duty upon goods imported from certain countries, especially distinguishing our Colonies, as against foreign nations, the system has been abandoned for about twenty years,—since the duty upon foreign and colonial timber was equalised.

From this hasty sketch, it will, perhaps, be seen that our Custom House and our Customs system have advanced with the advancing times. The old policy of restriction, protection, and penury has given way to one of broad, enlightened, and wealthy features. The commercial public, whether at home or abroad, are now comparatively unfettered by fiscal impositions and penalties; and they have happily responded by filling the coffers of the nation till they are "heaped up, pressed down, and running over." When it is considered that, in 1841, no less than 1,052 specific articles (exclusive of *ad valorem* rates) were subject to duties of Customs, yielding twenty-three millions; and that last year, only about half-a-dozen yielded nearly as much; a feeling of just pride comes over every Briton, when he thinks of the great results achieved. It may be argued that our immense increase of wealth and commerce has contributed to this end. No doubt that is allowable; but, above all, it must be admitted that the sound views of our modern financiers have had most to do with

it—not only in building up our revenue upon a safe basis ; but also in contributing to produce that bulk of trade itself, upon which our Customs' duties mainly rest. Some amount of praise is also due to the men, who, in the last half century, have administered this department of revenue ; and a good deal might be said upon the policy thereof, but another article must bear the "burden of that song."

THE CASE OF THE "ALBERT EDWARD."

TWO cases within a comparatively recent period, and a third within the past few days, have formed the subject of inquiries before the Wreck Commissioner, in each of which the question of the competence of the Court to deal with the master's certificate was raised with more or less success, but in each of which, nevertheless, the Court expressed a strong and adverse opinion upon the master's conduct. In the case of the *Ayton*, the master's certificate was suspended. Our readers are no doubt aware that an application was made to the Queen's Bench Division to quash the finding, on the ground that the ship, having sustained no material damage, the master could not be arraigned upon his certificate. This contention was upheld by the Queen's Bench, their Lordships deciding that where no material damage is sustained, the Court of Inquiry has no jurisdiction over the certificate, the provisions of the 32nd section of the Merchant Shipping Amendment Act, 1876, to the contrary notwithstanding. The next case was that of the *Chillianwallah*, where the master was an American, and did not hold a certificate granted by any British authority. The Wreck Commissioner admitted he had no power to deal with the certificate, but he held notwithstanding that he could entertain a charge against the master, and might express an opinion upon his conduct, and this was done in very unmistakeable terms. The case of the *Albert Edward* goes so far on all fours with that of the *Ayton*, that the

objection to the Court dealing with the certificate rests upon the vessel not having sustained material damage. The *Albert Edward* is one of the steamers belonging to the South Eastern Railway Company, and is employed on the Folkestone and Boulogne tidal service. On the 18th of April, the *Albert Edward* left Boulogne for Folkestone. Shortly after getting to sea, the weather thickened and eventually a fog came on. An additional look-out was set forward and on the bridge, and when the fog lifted, land was reported a-head, and immediately afterwards the vessel was aground in Eastware Bay. The course steered on leaving Boulogne was N.N.W., and was altered subsequently half a point to the westward—in order, we presume, to meet the easterly set—but it was insufficient, and the casualty occurred. The damage to the ship was fortunately trifling. The counsel who conducted the case on behalf of the Board of Trade did not contend that the Court had jurisdiction over the master's certificate, and therefore—and in our opinion very properly—refused to prefer a charge against the master, suggesting at the same time that the Court did not require a charge to be made in order to report upon the case. Whereupon the Wreck Commissioner is reported to have said: "Am I to report to the Board of Trade that this master has been guilty of an offence without giving him an opportunity of defending himself against it? If a charge is made he can defend himself. It would be a great injustice if this Court were asked to make a report against him without giving him an opportunity of meeting it. I entertain the very strongest opinion on the subject. Am I to reserve the charge against the master until his mouth is closed, and then am I to pronounce judgment declaring that he has been guilty of a default." Pressed by this specious argument, the counsel of the Board of Trade, after deliberation, preferred a formal charge of negligent navigation against the master of the *Albert Edward*. It was contended by the counsel for the owners that the Court had not only no power to deal with the master's certificate, but that it could not report to the Board of Trade adversely to him. The Court, however, took a very different view, and consistently with previous judgments of the Wreck Commissioner, pronounced a sweeping censure upon

the master, accusing him of recklessness and of disregard of seamanlike precaution.

It would seem that a very slight acquaintance with the principles of law and of legal procedure is required to demonstrate the irregularity if not the injustice of this course of action. If it were true that in accordance with the decision of the Queen's Bench in "*Ex parte Storey*," the Court in this case had no power to deal with the certificate of the master—and this was admitted—then the master of the *Albert Edward* was not before the Court at all, and the Court had no right whatever to pronounce an opinion upon his conduct, much less to brand him with its censure. It was a stretch of authority for which the provisions of the Statutes constituting Courts of Inquiry afford no justification, and which derives no sanction from the Common Law. If a man is put in the dock charged with any offence, the most venial or the most heinous, and if a plea to the jurisdiction of the Court is taken successfully, the prisoner is at once discharged. He has not been tried, because the Court has no power to try him, and it is not competent for the Court to express an opinion upon him in relation to the charge preferred against him. We can see no reason why a different principle should apply to a man who is brought into Court upon a charge which may involve his professional reputation and his means of existence. If a shipmaster is not before a Court of Inquiry upon his certificate, he is not before the Court at all, and although it may be competent for the Court to report upon the circumstances of the casualty to the Board of Trade, we cannot see that it is right or just that a man who has never been arraigned should be charged, or, being charged, that his conduct should be made the subject of judicial observation and censure. We cannot understand why the Wreck Commissioner should have suggested that a charge should have been preferred against the master of the *Albert Edward*, unless it was to enable the Court, with some show of law or of consistency, to pronounce an opinion upon the master's conduct. The master was not on his defence—and, from the nature of the case, could not be—and therefore the offer to afford him the opportunity of answering a charge which could not legally be preferred was simply absurd. Of course

it sounds very well to say that, before the conduct of a man in a responsible position can be reported upon, he should have an opportunity of knowing what the charge against him is, and of answering it. The public will no doubt appreciate the fairness and propriety of such a course of procedure. But if that man cannot legally be arraigned it will probably be thought, whatever facilities may be afforded him of meeting a charge or charges preferred, that he is an injured person. It cannot be lost sight of that a proceeding before a Court of Inquiry, in which a master or officer is concerned, so soon as it assumes the form of a specific charge, is in reality a prosecution—an issue raised between the Crown and the defendant. To put a man to his answer in such a case, where the Court has really no jurisdiction, is a novelty in legal procedure, and if such a practice were tolerated it might lead to the most mischievous and dangerous results. It may be competent for the Board of Trade to direct an inquiry into any case of maritime disaster; but to direct an inquiry in such a case, and to bring a charge against any person or persons, are different matters. The difficulties and the legal anomalies involved in the procedure before Courts of Inquiry, involving the conduct of masters and officers, led to the separation of the preliminary investigation from the proceeding against a master or officer when a formal charge arising out of the preliminary inquiry is made. But if, by reason of the nature of the inquiry, the master cannot be brought before the Court upon his certificate, it seems to us that to prefer a charge in such a case is to attempt to confer a jurisdiction which the law has deliberately withheld, and to subject a man to punishment to which, if the Judges of the Queen's Bench be right, he is not amenable. The Wreck Commissioner knows very well—and indeed has expressed himself to that effect—that to censure a man publicly in the position of a master or mate is equivalent to dealing with his certificate. The law says the latter course cannot be taken where the damage to the ship is not material. The Wreck Commissioner appears to think, notwithstanding, that although a man cannot be arraigned before him to answer for his certificate, he may still fall under the lash of the Court, and suffer in reputation as much as if the case were one in which he could be called upon to hand in his

certificate, and abide the finding of the Court. There is, no doubt, a good deal of judge-made law in this country, but our judges are in the habit at least of ruling new points in accordance with legal principle, and where they do not, the error does not long escape detection.

OUR HARBOUR DEFENCES.

A VERY wise man sets his house in order, and we, perhaps, should be neglecting an opportune time if we allowed this issue of our Magazine to pass without alluding to the above subject.

Australia and India are aroused to the situation. Calcutta, Bombay, and Madras are being put into a proper state of defence. Victoria has recently voted £850,000, and an annual outlay of £73,000 for ships, torpedoes, and rifles. New South Wales furnishes a like amount for the same purpose, whilst a Naval Brigade of 250 men, at an annual outlay of £9,916, already exists.

Such measures are very proper, but something bolder and more enduring is wanted. A few days ago Mr. Thomas Brassey, M.P., drew attention to the urgent necessity of the formation of Colonial Naval Volunteer Corps, laying particular stress on the wonderful field that Canada afforded Great Britain for raising seafaring recruits. Mr. Brassey tells us that the entire mercantile tonnage owned by Great Britain and her Colonies, and flying the English flag, is 8,184,000 tons, of which the United Kingdom owns 6,336,000, leaving about 1,800,000 as belonging to our Colonies, this last amount being greater than the combined mercantile tonnage of France and Germany.

If our distant possessions find it so necessary to take precautions surely it is not too much to expect that our own Home ports should be made perfectly secure. Are they so? Let anyone take the map of England, and, commencing at Liverpool, pass his finger south around the English Coast, thence north to Berwick-on-Tweed, to say nothing of Scotch and Irish ports, and,

if he knows anything of guns, forts, and ships, tell us what might possibly happen.

Sir Garnet Wolseley in a late number of the "Nineteenth Century" sketches a fleet of Russian cruisers preying on British commerce, and levying black mail on many of our defenceless towns and docks. Sir Garnet Wolseley may, for what we know to the contrary, be right, for has it not been found necessary to withdraw most if not all our high freeboard sea-going ironclads from coastguard duty, and replace them by low freeboard and not very reliable sea vessels, vessels only built for harbour purposes, that would be entirely at the mercy of a rough sea if called on to attack a flying cruiser levying black mail on, say Brighton, Sunderland, or other equally defenceless and exposed sea-board towns. Such being the case, for our fleet cannot be ubiquitous, does it not appear time to act with promptitude, so as to set our minds at rest.

Our attention has been directed to the subject by efforts that are being put forward in many large towns and seaports of England by Mr. F. I. Palmer, late commander of the Indian ironclad *Magdala*. He advocates the formation of Volunteer Torpedo Corps for harbour defence, and suggests that the ports along the coast of Great Britain be blocked into sections.

For example, Lancashire and Cheshire might form one district, the Bristol Channel a second, Durham and Northumberland a third, and so on until, practically, the entire seaboard of Great Britain was netted into a comprehensive and effective system of defence.

The Royal Naval Artillery Volunteers have deservedly gained the admiration of their superiors and those in power; surely it is not too much to expect that special torpedo forces, placed, if necessary, for discipline and economy under the nearest local Commanding Officer, would be equally valuable to the country.

Our experience decidedly favours the formation of such a popular service. There would be no difficulty in raising Volunteers if Government would only countenance and define the movement, and we contend the sooner the effort to do so is made the better; for it can only be by superior intelligence, such as gentlemen Volunteers would supply, that we can hope to outwit our enemies.

Torpedo warfare is, it is true, a science requiring some technical training, but so much attention is paid to it by all nations, that it seems unnecessary to make a mystery of the subject.

We think that the views expressed by Mr. Palmer are well worthy of consideration at the present time, and the more so because we know they are founded on considerable professional knowledge.

PATENT SCREW STEERING APPARATUS.



R. J. J. Kunstädter, of 9, Walbrook, has devised an ingenious arrangement in connection with the propulsion and steering of vessels which we consider deserving of notice. The device consists of a screw propeller, mounted in an opening in the rudder-blade, and called the "rudder screw." This rudder screw is connected with the main screw shaft by a universal joint, by means of which the motion of the shaft is communicated to the rudder screw. The effect of this rudder screw when working, is to greatly facilitate the steering and to assist in the propulsion of the vessel.

In the case of small vessels, the rudder screw will in itself be a sufficient propelling power, but in larger ships it will act as an auxiliary to the ordinary screw propeller; in either case it will facilitate steering. It can also be mounted aft of the rudder blade instead of in an opening in the blade.

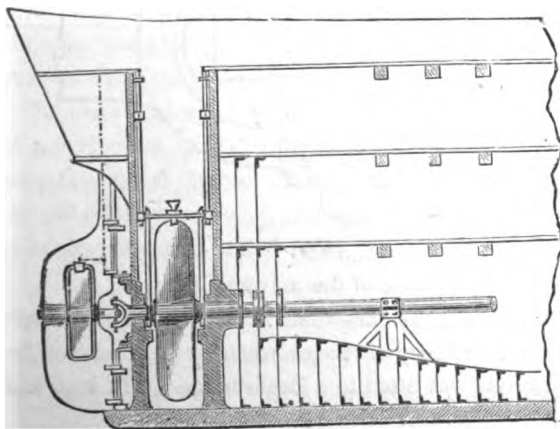


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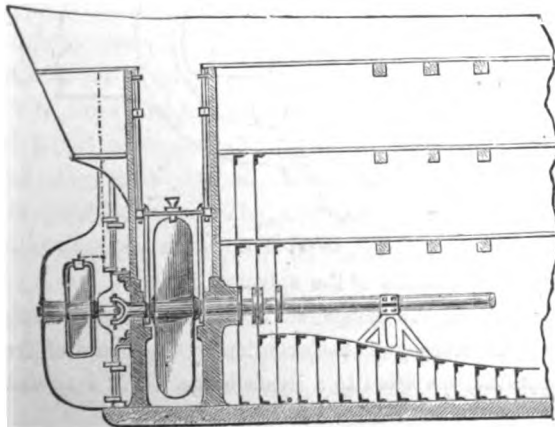


Fig. 1 shows the arrangement with two screws.

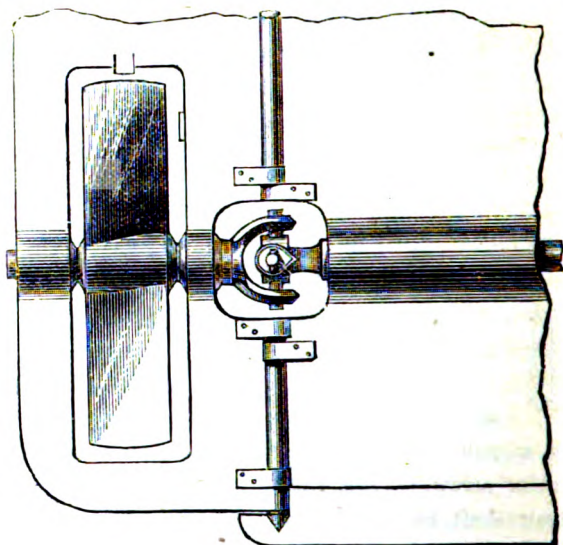


FIG. 2.

Fig. 2 shows the arrangement with one screw and the universal joint.

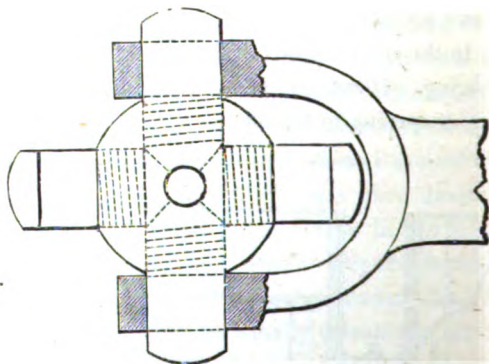


FIG. 3.

Fig. 3 gives the details of the universal joint.

The following are the particulars of a trial which recently took place to test the efficacy of the invention by the Board of Trade.

The apparatus was fitted to a steam barge, 50 ft. long and 9 ft.

6 in. beam. On the first trial, the helm was placed hard a-starboard, and the boat completed the circle in less than her own length in 64 seconds, with 62 lbs. pressure of steam, and with the engines making 151 revolutions per minute, with a strong tide running at the time. A second trial was made with the helm hard a-port in 65 seconds, with same conditions of steam pressure, &c., and the circle was completed in 65 seconds; and in a third trial, with the helm a-starboard, the circle was completed in 63 seconds.

These results were obtained with two screws, the one being that usually adopted for propulsion, and the additional one being placed in the rudder for steering.

The following are particulars of a trial with one screw being used, both for steering and propulsion, as reported in the *Army and Navy Gazette* of January 26th, 1878:—

“On Monday an important trial was made with Mr. Kunstädter’s ‘Patent Screw Steering’ Apparatus, fitted to a steam barge, which had been condemned by the owner through the impossibility of steering her, even with two men at the helm.

“The first trial took place under the direction of Capt. Henry Crozier, R.N., Mr. Kunstädter, M.E., Mr. Woolley, N.A., and others.

“A buoy was anchored in a convenient part of the river. The steamer then approached it under 50 lbs. pressure and, when close to, the helm was put hard a-starboard; the circle was completed in seventy seconds, the vessel turning in her own length. A second trial then took place, the vessel’s engines being stopped; when the helm was put down, the order ‘Full speed a-head’ was given, and the circle completed in eighty-three seconds with same result. The third trial was even more satisfactory, the helm being put hard a-port when touching the buoy, and the engines started from stop; the vessel turned in less than two-thirds her own length in fifty seconds. The strength of the tide somewhat militated against the first trials. The latter took place at slack water.”

CORRESPONDENCE.

STEERING-GEAR.

To the Editor of the "Nautical Magazine."

SIR,—The author of the letter on the above subject in the April number of the *Nautical Magazine* wishes to know if the angle of 90° for a ship's rudder would be more effective than 45° . It would at first sight appear, theoretically, that the former must have a considerable advantage, but there are reasons for believing that a closer examination will clear up all doubts on the subject.

The column of divided water on either side, immediately it passes the greatest width of the ship, naturally seeks to regain its equilibrium by uniting at the stern. In doing this it follows the contour of the run, and strikes the rudder at a considerable angle, and if worked out it will be found that the resultant must often amount to 90° .

In very short ships, or where the lines are full, an increase over the present angle might in *steam vessels* be of some service, because the divided water would then unite too far a-stern to be of service; but it must be borne in mind that with sails as a propelling power, it is not judicious to deaden the headway by putting the rudder over to an excessive arc. It is not uncommon to hear the officer of the watch when tacking, say, "Ease the helm down handsomely; do not check her way too soon." He knows that the effective power does not increase at large angles in a ratio equal to the loss of speed, and the turning force of the rudder is lessened.

No experiments appear to have been made with angles of 90° , but the whole of our men-of-war are tried with their rudders at various angles; and it is noteworthy that in the experiments which are given below that the turning power does not increase as the angle of rudder increases to the extent which might have been expected. Captain Miller must not feel offended because the correctness of a portion of his article has been questioned, nor that many deem he has underrated the turning powers of a merchant

steamer of 350 feet in length, which he states requires fifteen minutes, at eight knots an hour, with angle of rudder 45° . Grave defects must exist somewhere, for the leviathans of the *Northumberland* type, which are 400 feet between the perpendiculars, turn as follows :—

Full Circle—Helm to starboard, 35° ; speed, 10 knots ; diameter of circle, 650 yards ; time, 7 m. 45 s.

Full Circle—Helm to port, 35° ; speed, 10 knots ; diameter of circle, 637 yards ; time, 6 m. 37 s.

Full Circle—Helm to starboard, 25° ; speed, 10 knots ; diameter of circle, 806 yards ; time, 8 m. 12s.

Full Circle—Helm to port, 25° ; speed, 10 knots ; diameter of circle, 766 yards ; time, 8 m. 12 s.

Full Circle—Helm hard to starboard ; speed, 8 knots ; diameter of circle, 575 yards ; time, 8 m. 56 s.

Full Circle—Helm hard to port ; speed, 8 knots ; diameter of circle, 609 yards ; time, 8 m. 44 s.

In the last two trials the helm was put over before starting the engines, no hand power being equal to the task afterwards. By the aid of Macfarlane Gray's steam steering gear, no difficulty is now experienced in attaining the extreme angle of 42° with the keel, under any circumstances.

Full Circle—Helm to starboard, 25° ; speed, 8 knots ; diameter of circle, 785 yards.

Full Circle—Helm to port, 25° ; speed, 8 knots ; diameter of circle, 837 yards ; time, 9 m. 58 s.

Full Circle—Helm hard to starboard ; speed, 5 knots ; diameter of circle, 570 yards ; time, 13 m.

Full Circle—Helm hard to port ; speed, 5 knots ; diameter of circle, 596 yards ; time, 12 m. 11 s.

Full Circle—Helm to starboard, 25° ; speed, 5 knots ; diameter of circle, 711 yards ; time, 15 m. 19 s.

Full Circle—Helm to port, 25° ; speed, 5 knots ; diameter of circle, 714 yards ; time, 14 m. 37 s.

These results were the means of a large number of experiments conducted with the most scrupulous care on board the largest iron-clad in the world, and a perusal of them will point out that with

the rudder over to the maximum angle, the full circle, from a state of rest, was made in half the time said to be necessary for merchant steamers of incomparably smaller dimensions.

It may be added that since the *Northumberland* has been fitted with steam steering gear she completes a full circle, with a diameter of 415 yards, in 5 m. 30 s.

Many examples of the time occupied in circling by various classes of men-of-war could be given, but as they are taken from the trials of shorter ships, some of which turn in half the times stated above, they will not bear on the subject.

It would be of much value if Captain Miller would be good enough to favour his brother seamen with the data from which his deductions were drawn.

Yours obediently,
W.

FINDING THE AZIMUTH AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—In the December number of the *Nautical* for 1873 I communicated a method for finding my position at sea—independent of the meridian altitude at noon, which I have been in the practice of using for many years—by the use of Tables which first appeared in the *Nautical Magazine* for 1846. They were inserted by Lieutenant L. G. Heath, R.N. (I presume the present Admiral Sir Leopold G. Heath, K.C.B.) I have been informed that those Tables are extensively used by the officers in the Peninsular and Oriental Company's service and others. They are known as the A and B Tables.

The enclosed letter and explanation of a short method of finding the Azimuth at sea by them, as worked out by a "Worcester Boy," I place at your service, not for the sake of any merit in the method itself (which it possesses, undoubtedly), but for the purpose of showing the advantage a knowledge of the theory of navigation confers upon those who aspire to be called navigators, and also as an inducement to "old Worcesters" and others not to lay aside

or neglect that mathematical knowledge which they once possessed.

I am, Sir, yours faithfully,

J. F. TRIVETT.

London, April 15, 1878.

S.S. *Commilla*, Calcutta, March 15, 1878.

MY DEAR CAPT. TRIVETT,—I am now in the above steamer, running from this to Burmah and other places out in these waters, and take upon myself to send you a few lines—feeling sure that half an hour so employed is not thrown away—thinking it will not give you more trouble to read than satisfaction to hear that three of your old “Worcester” boys, Flower, Keighley, and myself, are all well and prospering fairly. Last year, being famine year, we had very hard work, but I don’t know that any one was much the worse for that. Flower got in a cyclone last May, and I had similar luck October, 1876, but we pulled through with flying colours. I enclose a plan for finding the Azimuth, which I daresay may interest you. I found it out, and have had it in constant use for over a year, and believe it to be correct, as I have endeavoured to prove. If you see any error I shall feel extremely obliged if you will let me know. I should also like to know what your opinion is about a master’s ability to take charge of a steamer (passenger or other), though she may be fore and aft rigged, when he only holds a certificate for fore and aft craft. So far as I am aware there is no law against his doing so; but it appears to me against the spirit of the law to permit a man who has failed to pass the usual examination to, nevertheless, reap all the benefits of a decidedly senior grade of certificate. I know a case in point where a man did this, and actually left England in charge of a first-class passenger steamer, and was a R.N.R. man to boot. If this was legal, surely it is only because the late change in the Mercantile Marine brings out fresh complications and peculiarities which were not all foreseen. Trusting this may find you in good health, with kind regards to Mrs. Trivett,

I remain, yours very sincerely,

W. G. HUTCHINSON.

To find the Azimuth from A and B Tables :—

Rule.—With *Correction for Longitude*, from (sum or difference of) A and B Tables, take away the decimal point (*i.e.*, treat it as a whole number) and find corresponding *Departure* :—With this departure as Diff. Lat. and 100° as departure, enter Traverse table, and the degree corresponding, or course, as generally styled, is the Azimuth.

Example : On March 5th, 1878, Lat. 21° N., the hour angle was found to be 3 h. 20 m. Required the Azimuth ?

Table A gives .31

„ B „ .14

The sum .45 as a distance.

Corresponding Diff. of Lat. in Lat. 21° = 42.

„ Dep. 100. }
 „ D. Lat. 42. } By Traverse Table gives 67°.

Ans. : Azimuth—S. 67° E.

Worked out by logs. it appears (the names being changed as above)—

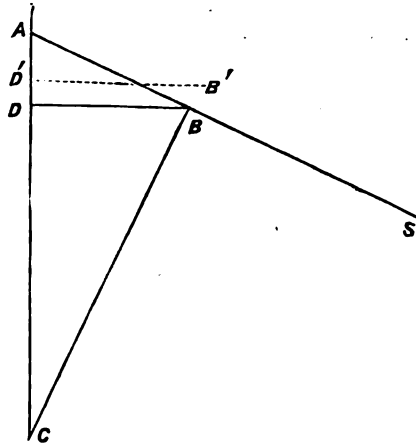
$$\frac{\text{D. Lat.}}{\text{Dep.}} = \text{Cot. Azimuth} \quad \frac{\text{D. Lat. } 42 - 1.623249}{\text{Dep. } 100 \quad 2.000000}$$

$$\text{Cot. } 9.623249 = 67^\circ 13'.$$

Explanation.—The A and B Table gives the diff. of Long. for every mile of error, or diff. of Lat. by the hour angle. Now if this be calculated and projected on a globe or chart, the line will be part of a circle of Equal Altitudes (necessarily a lesser circle), but when only a few miles of it are considered it may be represented by a straight line, as is done in other problems.

It will be seen that the observed body, being equi-distant from this line, must bear at right angles to it.

In accompanying figure, Lat. $D^1B^1 = D^1$. long., $DB =$ departure,



$DC =$ diff. lat. Join BC , then BC represents part of arc of Circle of Eq. Alt., or line of Equal Altitudes, and the observed body bears at right angles to it.

From B let fall BS perpendicular to BC , and produce SB , CD , till they meet in A . Then AC being the meridian, the $\angle CAS =$ the bearing or Azimuth of observed body.

Proof.—In rt. $\angle \triangle ABC$, the $\angle CBD$, $DBA =$ a rt. \angle ; again, in rt. $\angle \triangle ADB$, the $\angle DAB$, $DBA =$ a rt. \angle ; take away the common $\angle DBA$, then $CBD = DAB$.

Now $\frac{DC}{DB} = \text{Tan. } CBD$, or $\frac{D. \text{ Lat.}}{\text{Dep.}} = \text{Tan. } CBD = \text{Tan. } DAB$,

or Tan. Azimuth ; or, taking $D. \text{ Lat.}$ and Dep. by their opposite names, viz., $D. \text{ Lat.}$ as Dep. and Dep. as $D. \text{ Lat.}$ (see rule), then

$\frac{D. \text{ Lat.}}{\text{Dep.}} = \text{Cot. Azimuth}$, as in Traverse Table.

Q. E. D.

COLLISIONS AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—Your correspondent, "W. P.," towards the end of his remarks on "Collisions at Sea," in your January number, says:

"The existing Rules ought to enable the veriest tyro to avoid

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collision if he could only see what the other vessel was doing. In the most dangerous positions the present lights render no assistance in this respect. Collisions at night almost invariably arise from this doubt existing on the part of one or both vessels." While reading his imaginary case of collision and his remarks on it, it occurred to me that as what was wanted was something to enable the officer in charge of ship A (on port tack) to know in time what B was doing, *i.e.*, whether close-hauled or free, it might be met by a very simple plan, which, although involving a little extra trouble and expense, is as nothing compared to the advantages derived in these doubtful cases. And it is simply to propose that all sailing ships be fitted with a second set of lights abaft those now used (say somewhere about main rigging, which would give space enough between them for the two distinct separate lights to be detected by the glass). That, while on a wind, only the foremost set, as at present, be lighted, but that *going free*, both sets be lighted. In other words, whenever a course is set with a free wind, *i.e.*, whenever a course is *steered*, both sets should be lit; or, when the wind comes free, with the order, "Weather-braces," should also be given that of, "Light the after lights." If this plan were adopted, the ship A would have had no doubt as to what he had to do, for if *one* light only were showing on B, then A, being on the port tack would immediately keep off until he showed both (*i.e.*, red and green) his lights to B. But if A made out the *two* red lights of B, he would say, "*B* is going free, *I* must hold on," and I think this might be followed through, and would hold good in all cases of *sailing* vessels. Steamers *have* their distinguishing light, and would not require any alteration, and their Rules are partly clear.

I presume (not agreeing apparently with "Your Expert") that "W. P." intends his example to be one in which the greatest perplexity is likely to occur; for if a ship be making a long stretch, as *e.g.* across the Trades, she would be probably $6\frac{1}{2}$ points from the wind (or even when fine enough—though it is questionable whether it is prudent to do it at night—be sailing by the topmast studding sail), in that case each vessel might have the other $1\frac{1}{2}$ points on the lee bow, and if so, who is to say which

vessel is to windward. I fail to see that—as “Your Expert” puts it—B *must* know that A is close hauled, for she evidently might be going a point or more free with yards eased off the back-stays, and yet *not* show her green light (except in case of yawing), and that should neither vessel be laying higher than $6\frac{1}{2}$ points to the wind, as stated above, their want of certainty of each other’s movements is equal.

As one who feels much interest in the discussions which appear in your Magazine, I shall feel obliged if you will give this an early insertion, which will ensure its merits or demerits being speedily settled.

I remain, Sir,

Yours obediently,

Auckland, New Zealand,

T. C. T.

March 4, 1878.

P.S.—It would be desirable that the fore and after lights be on different levels.

TREATMENT OF SEAMEN WITH YELLOW FEVER AT
RIO DE JANEIRO.

To the Editor of the “Nautical Magazine.”

SIR,—Having recently returned from the Brazils, I beg to offer, for the information of your readers, a statement of my experience at Rio de Janeiro, in regard to the treatment of British seamen suffering from yellow fever.

On arrival, all ships must come to anchor between Fort de Large and Fort de Velligamon, there to wait the visit of the health officer. If you have a clean bill of health, as in my case, the steam-launch comes alongside, the officer enquires if all are well on board, how many the crew number, and where the ship hails from; you may then proceed to your discharging berth. The rules of the port are that every ship is to be boarded, thoroughly inspected, and a copy of the port regulations handed to the captain or officer in command, which I never received. One captain told me he had come to Rio six voyages, and this voyage he had just made was the first time he had had port regulations handed to him.

After being in port some few days, I had the misfortune to have

two seamen taken ill of yellow fever, I then lying at the Island Ras Euchadat, one of the worst places in time of fever. Having found out that the signal for hospital assistance was the English ensign at the foretop-gallant masthead, the signal was hoisted and kept flying sixteen hours, but no assistance came near. I then had to put the men into our own boat and take them on shore, thus rendering myself liable to a penalty of £50 if the town authorities had found out what I had done. I had to represent that they had been taken ill on shore, and I did not know the first symptoms of fever. The hospital where the men were sent belongs to the town, and is called Gamboa. It happened, shortly after, that my third engineer and first steward took ill of fever. Again the signal was hoisted and kept flying from ten in the morning till dark, and from 7 a.m. until I went on shore at 10 a.m. next day, to complain to the British Vice-Consul, the Consul being from home at that time. Not having been able to get any assistance on the previous occasion of showing the signal, and not wishing to see my men dying without help, I put them also into a boat, and took them on shore, and got them smuggled off to Gamboa Hospital under false pretences, but in this case I had to give security for hospital expenses. My engineer died one hour after arriving at sick ward and steward two days' afterwards.

On my arrival at the Consul's office I protested against the manner in which British seamen were neglected in cases of fever, in not receiving proper assistance when required. I told the Vice-Consul how in those four cases I had subjected myself to a fine of £200 in full, but if I could not get assistance what was I to do. The answer to my protest was that at the same time I went to complain to the Vice-Consul, the health officer had boarded my steamer, that my flag was not flying so long as stated, and that I had said so in the presence of the health officer and his son. Now at the time they boarded I was waiting orders at the British Consul's office. The Vice-Consul then wrote to the Minister of Marine regarding the affair, and received an answer that it was an oversight, that they did not notice my flag flying, and that instead of having two visits per day amongst the ships in port they would have five or six, and new rules would be made con-

cerning working cargoes at night instead of day. All this seemed in my opinion merely an excuse for negligence ; my men died, but I am convinced that had they received proper assistance in time the result would have been different.

Now as every ship has to pay for the seaman's hospital at Rio (which is called man and mast tax), it is hard to have to pay also for other hospitals through the carelessness of the authorities there. I had men in no less than three different hospitals, and the one in which I put my second engineer and first officer cost as much as £1 18s. per day. I had to send them there as I could not trust them at (Jura Juba) the seamen's hospital.

On arrival at my lodgings, where my doctor had ordered me to go, I was much surprised to have a note handed me from an English shipmaster, addressed to a shiphandler, which came at 11 p.m. from Jura Juba. It stated : " For God's sake try and come and see me. I have no one to attend me. I am dying for want of assistance. Or try and get some one else." This captain had his flag flying, I was told, for forty-eight hours, for assistance from the hospital, but it was of no avail ; so an English doctor and shiphandler at last took a steam launch and took him themselves without leave from any authorities.

For every seaman who dies or is left behind, a certificate must be written by the Brazilian authorities, which costs 10s. for each man. In my case I had eighteen certificates. This is for the Consul's guidance in signing seamen off articles. In the next place, in Rio de Janiero the Consul will not receive any clothes belonging to any man who has fever in the hospital and is alive, nor will he receive any dead men's clothes.

In Bahia, men who are alive in the hospital, and have fever, must have their clothes deposited in the Consul's office, but dead men's clothes will not be received. At the same time, they tell you that the clothes must be taken home and deposited with the proper authorities. Now, where can those clothes be put on board ship without in some way tending to breed fever ? The longer they are kept the worse they get, leaving out of consideration the question as to whether it is right to bring fever-tainted garments into England.

It is a sad thing to see so many shipmasters (no less than seven from 14th January till 20th February) also officers and seamen, dying in a great measure through not having proper attention at hospital or through carelessness in not attending to ships' signals. I believe this year we will leave hundreds of our seamen on the Brazilian coast. What is wanted is an English hospital, with an English doctor, where, without reference to religious views, men of one creed could be looked after as well as another, and by means of which an English doctor could be brought on board ships lying in the bay without an order from the Consul, as time is a matter of importance in all fever cases.

By inserting this letter in your valuable monthly Magazine you will, I think, confer a benefit on others who may be likewise placed.

Yours respectfully,

A SHIPMASTER.

BOOKS RECEIVED.

A Manual of Naval Architecture, for the use of Officers of the Royal Navy and Mercantile Marine, Shipbuilders, and Shipowners. By W. H. White, Assistant Constructor, Royal Navy ; Instructor in Naval Architecture, Royal Naval College, &c., &c. London : John Murray, Albemarle Street. 1877.

MR. WHITE is the Instructor in Naval Architecture at the Royal Naval College, Greenwich, and the book before us is, both as regards design and execution, to some large extent, the result of his labours in that capacity. In his preface he says that he was induced to undertake the work in consequence of having been frequently asked by naval officers to recommend them some text book on naval architecture, and that material collected for his lectures to students has been largely used in the work before us. For some years past there has been a growing desire on the part of naval officers and shipmasters, and indeed of all who are interested in, or have to do with ships, to know something of the

science involved in their construction and behaviour at sea. Generally speaking, it is of course impracticable for any but the shipbuilder to have a knowledge of the details of shipbuilding, and, on the other hand it is impossible for any but a skilled mathematician to be able to follow all the investigations of the science of naval architecture. Both these facts are recognised in the book before us. The author avoids laboured practical detail and higher mathematics, and the marvel is that thus rigidly restricting himself to a language "understood" of ordinary folk, he is yet able to demonstrate so much and describe so much more. This book will also serve the purpose of an introduction to the study of naval architecture for students who intend to read the mathematics of the question. The science has made great advances since the large books by the late Professor Rankine and Mr. Scott Russell were written. Much of the matter contained in them is even now obsolete, and the student is compelled to have recourse to detached papers in the Transactions of the Institution of Naval Architects and of other scientific societies. Mr. White goes over all the groundwork of the subject, and where, to keep to his prescribed path, he refrains from the calculus, &c., he refers the reader to places where more detailed information may be found. With such text books as this in the Royal Naval College, one may confidently expect that the next generation of naval officers will be well grounded in the first principles of the science of naval architecture.

The first chapter, on the buoyancy of ships, goes over very old and familiar, though necessary, ground, and would hardly call for much notice from us but for some remarks upon freeboard. With some satisfaction we find that the view we were almost alone in supporting in opposition to the advocates of paternal legislation—that is, that it is impossible to lay down any arbitrary rules for the freeboard of merchant ships—is now so generally accepted as to be stated in a scientific text book. We read:—

"As regards merchant ships, the diversity of practice in loading renders it difficult to lay down any rule; there seems, however, a concurrence of opinion in fixing the minimum reserve of buoyancy at from 20 to 30 per cent. of the displacement, varying it according

to the season of the year, the character of the cargo, extent of the voyage, &c. But, perhaps, the greatest difficulty met with in attempting to apply any such rule to merchant ships is found in the selection of those parts of the ships which shall be regarded as contributing to the reserve of buoyancy. Spar-decks, deck-houses, inclosed poops and forecastles, &c., are very commonly built of comparatively slight scantlings above the upper deck proper; and the assignment of proper values to these erections in estimating the reserve of buoyancy has given rise to much discussion, out of which no practical rule for guidance has come which can command general acceptance."

The second chapter on the *tonnage* of ships gives a description of builders' and yacht tonnage, and then of register tonnage. In this the writer does not go into detail, but gives a good general account of the rules, in which not only is full credit given to Mr. Moorsom's system of measurement, but the anomalies of the existing law for the allowances for propelling power in steamers are forcibly exposed. Several cases are quoted by way of showing the great discrepancies caused by the rules; among others the Holyhead packet, *Connaught*, which, although she does not require much coal, being designed for short passages, has the large allowance of 962 out of a gross tonnage of 1,412. This is of course absurd, but it is not quite accurate to speak of her allowance as being 75 per cent. over the measured machinery space, the fact being that the *Connaught* is a paddle steamer, and her allowance is 50 per cent. over the actual machinery space. Mr. White explains that in the Merchant Shipping Code of 1871 an amendment of this law was proposed by which the actual coal space would be given in addition to the machinery space; but the drawback to this rule is caused by the frequent cases of shifting bunkers, spaces which may be occupied by cargo or coals. We have again and again directed attention to the whole subject, but we fear there is little prospect of alteration. We may add that, in 1874, the Board of Trade drew up a Bill embodying several desirable amendments of the tonnage rules, and proposing a uniform allowance of 75 per cent. over the actual machinery space in screw steamers. The Bill was referred to a Select Com-

mittee, who so cut it about and altered it as to practically destroy it, and the Bill was then withdrawn.* The plain fact of the case is that the anomalies of the tonnage rules remain, because the owners of steamships, who gain so much by them, have sufficient Parliamentary influence to prevent alterations, and thus the owners of coasting sailing vessels, whom it most affects, have to pay an unjust proportion of dues.

The chapter on stability will, we hope, be of much service in popularising well known truths, which, although as generally recognised by scientific men as is the law of gravitation, are nevertheless frequently impugned by naval officers who read papers at the United Service Institution and elsewhere.

The sections of the book which deal with the questions of the oscillations of ships in still water and among waves, also on the theory of deep-sea waves, and on observations of rolling, form an especially valuable part of the work. Much of this branch of the science is of comparatively recent origin, and, so far as we can see the author has given us the last word that has been said upon every point.

The chapter on "Deep-Sea Waves" is an admirable *resumé* of all that has been said of late years upon the question, or rather all that is worth knowing. The Admiralty have issued instructions to their officers to make observations of waves; and Mr. White gives a reprint of Mr. Froude's memorandum as to the methods of observation. Although officers of the Royal Navy are the men who have the most time at their disposal for this kind of work, we yet think that masters of merchant vessels have much more frequent opportunities of observing large waves; and we would commend this chapter to their careful consideration. On Mr. Froude, and on other English and also French mathematicians who give so much thought to these questions, we may certainly rely for making the best use of results of observations; but data are wanted, experience and observation of heights and lengths of waves, such as can only be obtained by men who see them, and shipmasters are of all men those who could do this most valuable scientific work. We

* See *Nautical Magazine*, Vol. XLIII., pages 686 and 757.

have some information as to the heights and lengths of waves, although only a small fraction of what is wanted ; but of one part of the subject we know nothing. "No theory has yet been accepted," says the writer, "which represents the genesis of waves ; the trochoidal theory merely deals with waves already created, and maintaining unaltered forms and velocities. There can, of course, be no question but that waves result from the action of the wind on the sea, and that there must be some connection between the character and the force of the wind and the dimensions and periods of the waves. But as yet we have not sufficient knowledge to determine either the mode of action of the wind or the law connecting its force with the dimensions of the waves. Here again is a field where careful and extensive observations can alone be relied upon ; pure theory would be useless. And here is, perhaps, the most difficult task which the naval officer, desirous of advancing our knowledge, can face ; but, on the other hand, if it be successfully accomplished, the results will be interesting and valuable. In the preceding pages it has been shown that, with care, the lengths, heights, and periods of waves may be determined very closely when the sea is not confused ; and it is also possible, with care, to ascertain simultaneously the force or speed of the wind. But it is to be noted that the rapidity with which waves travel, and the fact that they maintain their lengths and speeds almost unchanged even when the force of the wind decreases and the wave height becomes less, make it necessary to exercise great caution in associating any observed force of wind with the lengths and periods of waves observed simultaneously. The importance of this matter justifies further illustration. If the wind is at first supposed to act on a smooth sea, and then to continue to blow with steady force and in one direction, it will create waves which finally will attain certain definite dimensions. The phases of change from the smooth sea to the fully formed waves cannot be distinctly traced. It is, however, probable that changes of level, elevations and depressions, resulting from the impact of the wind on the smooth surface of the sea, and the frictional resistance of the wind on the water are the chief causes of the growth of waves. An elevation and its corresponding

depression once formed offer direct resistance to the action of the wind, and its unbalanced pressure producing motion in the heaped-up water would ultimately lead to the creation of larger and larger waves."

We would suggest a view of the cause of the production of waves, which does not appear to have struck Mr. White. It does not to us appear possible that a steady uniform wind, unassisted by other forces, could produce systems of waves. To produce waves in the water it would seem that there must have been in the first place waves in the atmosphere. Anyone may observe that on a windy day, more especially upon a hill side which slopes towards the wind, at intervals a gust causes a marked bending of the grass, so that one can almost see the wind run over it. Further observation will show that such gusts come at intervals approaching regularity. We would then suggest that waves in the sea are caused by pulsations in the wind pressure, although, when formed, they may be accelerated by steady wind pressure.

The chapters on the strains and strength of ships are good work, and certainly original in the method of treatment. In the section devoted to the materials for shipbuilding, the respective advantages of iron and wood are brought into prominent contrast. In the first place, statistics are adduced to show how the old material is gradually being superseded by the new. Thus we are told that, of vessels added to the Register in four years, taken at intervals, in 1850 less than one-tenth, in 1860 nearly one-third, in 1868 five-ninths, and in 1875 nearly nine-tenths of the tonnage was iron. Further statistics as to the actual tonnage on the Register in each year, both of steamers and sailing vessels, tell the well-known story that all steamers and most large sailing vessels will soon be of iron. The respective properties of the two materials are then gone into at length.

The chapter on the resistance of ships is of course based chiefly upon the results obtained by Mr. Froude; it is most interesting, and in a future number we may return to this part of the subject. There are also valuable chapters on sail and steam propulsion, and on the steering of ships.

We can confidently recommend this book to our readers as well

fulfilling the design of the author. He has steered clear of higher mathematics and kept intricate calculations out of his pages; has, in fact, given us a readable book. Under these circumstances we are surprised to find that he has been able to put so much of such a difficult subject in such an easy form, and this, moreover, without skipping difficulties. The facts dealt with, of course, are not new; original investigation was outside the scope and purpose of the work, but the author has treated every branch of the subject in a method all his own.

A Voyage in the "Sunbeam": Our Home on the Ocean for Eleven Months. By Mrs. Brassey. London: Longmans. 1878.

A REPRINT of an ordinary ship's log is not, as a rule, an entertaining publication. But if the log be that of a steam yacht such as the *Sunbeam*, going round the world on a cruise of pleasure, and be written up by a lady of an enthusiastic and sympathetic nature, the record will probably be changed from a dull recital of wind and weather, latitude and longitude, passing ships and occasional incidents on board, to a charming record of varied experiences and many changing scenes. The voyage of the *Sunbeam* is in itself a unique performance. A gentleman of considerable wealth qualifies himself to hold a master's certificate, and then, in command of his own vessel, takes his wife, children, and a party on a cruise round the world. The *Sunbeam* left England in July, 1876, and the route taken may be approximately stated as follows: Madeira, Teneriffe, River Plate, Magellan Straits, Chili, Valparaiso, Society and Sandwich Islands, Japan, China, Singapore, Ceylon, Aden, Red Sea, Mediterranean, Gibraltar, and home. This unprecedented feat is worthy of British pluck and enterprise. Although accomplished in a well-appointed steam yacht and attended with many comforts, yet the enterprising spirit which prompted the expedition was truly British, and well worthy of encouragement.

The manner in which Mrs. Brassey has put together her chronicle of the eleven months' cruise merits high commendation, both as regards her literary style, which is unaffected and intelligible, and also as regards her views and criticisms on the varied scenes and incidents which came under her notice. More-

over, the spirited authoress has managed unconsciously to inweave, with her narrative, much of her own ardency of nature, which gives the record quite a personal charm. She makes us as fond of her children and her pets as she herself is ; we look up to "Tom" with fully as much respect as she does ; and all through our perusal of the book we have been fairly worked up to a lively sympathy with all her doings and her hopes and fears. Not the least attractive part of the book are the numerous well-engraved, pretty little sketches, mostly from drawings by the Hon. A. Y. Bingham, one of the party on board the *Sunbeam*. Altogether the book is handsomely got up, and deserves to meet with success.

Under the Red Ensign. By Thomas Gray. London : Simpkin, Marshall and Co., Kent and Co., J. D. Potter, Wilson (late Norie), and Pewtress and Co. 1878.

THERE is probably no civilian in this country so fully and practically acquainted with all that relates to ships and seamen as Mr. Thomas Gray. Like most able men, he has a great power of assimilating facts ; and the influence of such assimilation is plainly evident in all his utterances. Moreover, his long experience at the Board of Trade has given him exceptional opportunities of gathering information on Mercantile Marine matters. "*Under the Red Ensign*" is designed to be of service to boys desirous of following the sea as a profession, or to persons interested in sending such boys to sea. The book is divided into two sets of chapters, one set for parents and guardians, and the other set for boys going to sea. Parents and guardians are told what the sea service is like, what are the chances of a boy making his way, how to set about getting a ship, and especially who are the people to be avoided in finding a ship for a lad. The chapters for boys are characterised by accuracy, common sense, manliness, and directness. We have seldom read such sound advice expressed in so plain and unmistakeable a manner. Any parent or guardian of a boy destined for the sea who reads the book, cannot fail to profit largely by it. Any lad going to sea, who studies it with earnestness, will, as regards marine matters, have an old head upon young shoulders.

American Journal of Mathematics, Pure and Applied. Published under the auspices of the Johns Hopkins University. Vol. I, No. 1. Baltimore. Ind. J. Murphy & Co. London: Trübner & Co. 1878.

THIS is a new publication of the highest class. The trustees of the Johns Hopkins University, with an enlightened liberality most commendable, have to a very great extent undertaken the risk attendant upon the production of such a work. That they have gathered around them a brilliant staff is sufficiently evidenced by the names of Sylvester, Storey, Cayley, Pierce, Newcomb, Rowland, and other celebrities appearing as editors and co-operators. The publication is intended to be quarterly; it is in the quarto form, for convenience of expressing mathematical formulæ, and is intended primarily for the publication of original investigations. The work will doubtless be invaluable to mathematical students in America, and will also be an excellent means of communication between mathematicians throughout the world.

Rule of the Road at Sea. Return to the House of Commons, 10th May, 1878.

ONE of the most useless papers ever presented to Parliament is the paper just issued under the above heading. It really is too bad that public time and money should be wasted over such matter as is in this Return. That the time of public officers should have to be occupied over it is bad enough, but when, in addition to that, public money is spent in printing and circulating it, the waste is such as to demand censure. Indeed we much question whether, if there were now in the House of Commons such public-spirited and painstaking men as the late Mr. Joseph Hume, such a palpable waste of public money would pass unnoticed. The evil of the "Return" we are referring to does not, however, end with the waste of public time and public money, for, in addition, the printing of the contents of it at the cost of the Government is likely to give a false and a dangerous importance to what is worthless. Every one knows the substance of Mr. Lacon's proposed rules, and every practical man, therefore, as a direct consequence, is fully aware of their uselessness, and of the very great evils that

would immediately follow their adoption. We do not propose to waste our space by reproducing them in our pages. It is sufficient for the public to know the only important fact that the papers show, which is, that his proposed rules have been fully considered by the Committee appointed jointly by the Board of Trade, the Admiralty, and the Trinity House to consider the whole question, and have been utterly and finally rejected. This being the case we think it only right to inform our readers, and to caution them, that any consideration of these proposals is, under the circumstances, waste of time. In closing this notice, which, indeed, is fuller than the unimportance of the matter deserves, we must pay a tribute to Mr. Stirling Lacon and his colleague, Sir J. C. D. Hay, Bart., M.P., for their uninterrupted and unmitigated persistence in their advocacy of the views of the former; but it is a matter of sincere regret that so much energy has been wasted, and will probably continue to be wasted, on suggestions which every practical man, who is at all entitled to express an opinion on the matter, regards as fraught with confusion, difficulty, and imminent danger.

On the Supply of Nitrate of Soda and Guano from Peru, &c. By Captain George Peacock, F.R.G.S. A Paper read before the Devonshire Chamber of Agriculture at Exeter, March 15, 1878. CAPTAIN PEACOCK for many years was indefatigably engaged in the opening up of the guano and nitrate of soda trade, and in the paper above mentioned he, in an agreeable manner, tells the tale of his labours. He has a pardonable pride in regard to his efforts, and claims to have had the honour of commanding the first steamship that ever navigated the Straits of Magellan. It must be a matter of considerable satisfaction to Captain Peacock to observe how greatly the trade with the Pacific ports has developed, and how largely the guano commerce has increased since his early and honourable association with them. We are bound to say that we have read his paper with much interest.

The Merchant Shipping and Underwriters' Association, Limited, Melbourne.—Report of the Committee for 1877.

THE institutions of the mother country appear to be generally copied by her offshoots. Melbourne has a flourishing Under-

writers' Association, established for the procuring of information and the protection of the interests of the members in respect of shipping and cargoes, and the pamphlet before us is the Ninth Annual Report of the Committee. We find they have given attention to questions of surveys of ships, overloading, shipping news, telegraphic advices, and an Australian Register of Shipping. We wish them all success, and are glad to see that their financial position is very satisfactory.

Tables Relating to Life Salvage on the Coasts of the United Kingdom during the Year ended 30th June, 1877. Issued by the Board of Trade. Queen's Printers. 1878.

THIS annual official statement is valuable and interesting. The year under consideration gives the best return yet published, and we learn that by the various means employed, including lifeboats, rocket and mortar apparatus, ships' own boats, steamers, luggers, &c., &c., no less than 4,795 lives were saved.

LIME-JUICE.



THE island of Montserrat, one of the Antilles, has been for many years chiefly devoted to the cultivation of lime trees. At the present time, the plantations cover more than 600 acres, and contain over 120,000 trees. About twenty years ago, Messrs. Sturge, of Birmingham, established these plantations, and now they are the property of the Montserrat Company, Limited.

The advantages of an unlimited supply of unadulterated and properly-prepared lime-juice are too obvious to be referred to at length; but, as it appears that the Company above referred to adopt special precautions for the production of juice of really trustworthy quality, using only the ripe fruit, and expressing the juice in a systematic and careful manner, we think it desirable to call the attention of our readers to the facts, and to caution them against obtaining lime-juice of an inferior quality, which is un-

pleasant to the taste, and not nearly so efficient an anti-scorbutic as the more genuinely-prepared article.

The superiority of lime over lemon-juice as an anti-scorbutic is generally admitted, and we hope now that an unlimited supply of pure lime-juice, made on the island where the fruit grows, is obtainable, that lemon-juice made in England will be discontinued as an anti-scorbutic for use in our Mercantile Marine.

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all communications should be addressed.

ENGLISH (APPLICATIONS).

1593. Robert Scott, Northumberland. "Guiding or steering and sinking torpedoes."

1606. Herbert Wadsworth, Genesco, N.Y. "Power mechanism for effecting movements of rudders."

1609. John Nicholson, South Shields. "Improvements in the mode of, and in apparatus for raising, launching, and lowering ships' boats."

1660. George Mac Lellan and Wm. Jones, Glasgow. "Improvements in the construction of armour to be used for the defence or protection of ironclad and other vessels, land batteries and other fortifications."

1677. Geminiano Zanni, Highbury. "Improved electrical signalling apparatus, chiefly designed for use in ships."

1695. John Young Buchanan, Edinburgh. "Improved means for maintaining the buoyancy of ships when their skins have been pierced."

1696. John C. Thompson, Brooklyn, U.S.A. "Improvements in or applicable to berths for passengers, and pens, stalls, or boxes for animals on shipboard, to retain them in a level position and to prevent sea sickness."

1748. Cornelius Edward Kelway, Portsea. "Improvements in apparatus for detecting and indicating the presence of water in one or more parts of a ship, or in any of the watertight compartments thereof, and for ascertaining and indicating the height and approximate quantity of such water; parts of which apparatus are also applicable to ascertaining and indicating the draught of water of ships, and to registering the rise and fall of tides."

1827. Richard William Cowan and Charles Page, Montreal. "Improvements on the construction of paddle-wheels for propelling balloons and submerged vessels."

1830. James Rooney McDonald, Sheerness. "Improvements in the combination and arrangement of apparatus for the instantaneous closing and securing of the ports, air-holes, and other similar openings in ships of war and other vessels."

1837. John Boag, Liverpool. "Improvements in ventilating ships and other vessels, and in apparatus therefor."

1838. George William Garrett, Manchester. "Improvements in and appertaining to submarine or subaqueous boats or vessels for removing, destroying, laying, or placing torpedoes in channels and other situations, and for other purposes."

1909. Le Comte Albert Conte de Barbaran, Paris. "Improved apparatus for increasing the efficiency of a screw propeller and for assisting in the steering of the vessel."

ABRIDGMENTS.

9504. Francis Wm. Phillips, St. Leonards. "An improved apparatus for cleaning ships' bottoms at sea." This invention has reference to an apparatus for cleaning the bottom of a ship, by brushing or scraping from it grass weeds or barnacles which may have accumulated thereon. This scouring or scraping may be effected whilst at sea, the motive power of the ship's way being utilised for actuating the brush or scraper. It consists of a revolving brush or scraper drum upon which the brushes or scraper are fixed. This revolving drum is connected by a swivel joint at the forward end to a short stationary drum which is guyed into any required position along the ship's bottom by suitable ropes from the deck, one being under the keel and from the

martingale through a pulley-block, which latter rope allows the drum to be dragged forward and to drop towards the stern as desired. The revolving motion of the brushing drum is obtained from a log attached thereto by a wire rope or other suitable means.

3526. James Yates, Rotherham. "Improvements in the manufacture of ingots, plates, and blocks for ship and fort armour and other purposes." This invention relates to the carbonising or decarbonising wholly or partially upon the surface to a given depth, or in their entirety of cast ingots, plates, or blocks of iron or steel. The metal is "teemed" from a Bessemer converting or other furnace into specially prepared moulds, so that during the period of cooling the ingot should wholly or in part absorb or give out such a quantity of carbon as may be desired, thereby producing an ingot, plate, or block homogeneously or heterogeneously composed of iron or steel, of such a degree of temper or hardness as may be required.

3592. George Souter, Elgin. "Improvements in apparatus for hauling fishing nets and for other similar purposes." This simply consists of a crane fitted with a large sheave pulley round which the rope passes and several smaller guide sheaves.

3678. John Washington Whinyates. "Improvements in and appertaining to vessels for navigating canals and in the mode of preventing sidewash." This consists in constructing barges with a baffle board on each side of their bows, so arranged that it can raise slower with the boat as it is laden or otherwise. Instead of baffle boards for steam barges the hulls are made with flat parallel sides, with a rudder at the end of each of said sides, the central part of the bow and stern being cut away, and a longitudinal channel or passage way goes the whole length of the bottom of the boat. In this the propeller is placed, which consists of a series of floats arranged vertically on chains, round two smooth wheels near the bottom of the boat and a larger wheel between them above.

AMERICAN.

201650. John Charles Capern, New York. "Improvement in screw propellers." This invention consists essentially in a number

of blades, consisting of sections of hollow semi cones, attached to a conical boss or hub, having their flaring sides a-stern with their two ends on the same radial line. Two or more of these blades attached to the hub may constitute the wheel.

201740. George Brown, Washington. "Improvement in adjustable floats for paddle-wheels." The buckets are so arranged that they can be adjusted out and in on the wheel-arm to regulate the wheel, according as the boat is carrying a heavy or light load. It can also be adjusted at different angles to the wheel-arms, according as the boat may be loaded down by the bow or by the stern. The buckets strike the water in such manner that the solid body of water offers its resistance, and not merely the top ; and as the buckets do not lift or hold any dead water, there is no loss of power but an increase of speed.

SWEDEN.

10. V. Zethelius. "A hydraulic propeller for vessels and boats."

11. J. Pintsch. "An apparatus for illuminating the course of ships at sea by gas."

95. H. J. Cole. "An apparatus for cleansing the bottoms of vessels under water."

111. H. Hirsch. "A screw propeller."

114. J. Wain. "An apparatus for steering vessels."

181. J. Keiller. "Boats for steam fire-engines."

186. C. J. Ruthberg. "A life apparatus."

211. C. Spruyt de Bay. "A propeller for vessels."

225. K. Ahlborg. "Fog-signals for steamers."

252. O. Meinich. "A vessel for breaking ice."

BELGIUM.

44705. E. L. Berthon. "Improvements in collapsible launches, pontoons, and boats."

44717. J. L. Lay. "A torpedo boat."

44742. E. Fleischer. "A hydromoter for propelling and steering vessels."

44764. L. Le Guénédal. "Fixing a spare rudder in the open sea."

SPAIN.

16. H. J. Cole, Valencia. "Improvements in an apparatus for cleaning the bottoms of ships and other submerged bodies."

47. W. D. Percival, Madrid. "Improvements in apparatus for raising sunken vessels and other submerged bodies."

76. "J. E. Commerell. "Improvements in the construction of rudders."

81. J. Russel. "Improvements in pneumatic suspenders for enabling ships with their cargoes to clear bars of harbours and rivers."

93. A. Bosch and Baneras, of Seville. "A cork mattress for saving life at sea."

106. J. Koig Gelpé, Barcelona. "An apparatus for unshipping goods in bulk."

126. F. G. Z. Perez. "A life mattress for the Navy."

GERMAN EMPIRE.

1108. C. G. Norrenberg, Cologne. "Towing vessels by means of two endless wire cables with gripping irons."

AUSTRIA.

28. A. Eschner, Eichwald. "An automatic boat for ascending rivers."

29. C. Essbuchel, Leobersdorf. "A water-motor called 'oar-motor.'"

FRANCE.

121,409. Courtaud. "An insubmersive swimming costume."

121,642. Luke. "Improvements in the mode or means of raising or withdrawing rudders, screw-propellers, or rams from the water, when such apparatus are no longer required."

SHIPBUILDING, 1878.

SAILING SHIPS.

Name of Port.	No. of Ships first four months.	No. of Ships corresponding period last year.	Gross Tonnage first four months.	Gross Tonnage corresponding period last year.
Aberdeen ...	1	8	1,174	2,879
Banff ...	5	2	1,083	444
Barrow ...	2	1	472	1,352
Belfast ...	1	2	1,719	3,498
Bristol ...	1	1	16	44
Cowes ...	3	3	201	124
Dartmouth ...	21	18	1,505	1,262
Dundee ...	1	2	326	1,925
Faversham	11	6	491	303
Glasgow ...	22	18	23,218	17,676
Greenock ...	2	3	1,878	1,412
Grimsby ...	14	12	1,042	995
Hartlepool	—	1	—	1,217
Hull ...	17	10	1,288	751
Jersey ...	2	2	136	105
Liverpool ...	9	9	7,581	6,034
London ...	15	15	671	652
Plymouth ...	7	8	461	189
Port Glasgow	4	4	3,450	5,024
Portsmouth	1	2	46	141
Rochester ...	7	5	274	220
Rye ...	10	7	586	336
Southampton	—	3	—	3,162
Stockton ...	—	1	—	1,487
Sunderland	7	8	5,283	6,788
Whitehaven	2	2	2,104	1,861
Yarmouth	7	6	371	269
Other Ports	68	47	6,296	4,733
Totals	240	196	61,672	64,953

SHIPBUILDING, 1878.

STEAMSHIPS.

Name of Port.	No. of Ships first four months.	No. of Ships corresponding period last year.	Gross Tonnage first four months.	Gross Tonnage corresponding period last year.
Glasgow ...	29	19	27,084	15,174
Greenock ...	7	4	9,862	2,216
Port Glasgow	11	7	5,021	3,074
Sunderland	13	16	17,167	19,842
Newcastle ...	22	14	26,543	16,424
North Shields	11	2	4,444	1,347
South Shields	5	7	2,712	1,052
Liverpool ...	3	5	2,029	6,096
Dundee ...	4	5	4,943	2,478
Hartlepool ...	11	6	14,965	8,438
Aberdeen ...	3	1	1,688	255
London ...	8	2	440	134
Belfast ...	1	1	3,848	55
Stockton ...	7	—	8,339	—
Middlesbro'	4	7	2,747	6,188
Hull ...	1	—	398	—
Whitby ...	2	1	3,212	1,455
Barrow ...	5	3	4,147	4,754
Southampton	2	1	1,058	44
Leith ...	4	—	1,127	—
Other Ports	12	8	1,065	1,072
Totals :—				
Steamships	165	109	142,389	90,098
Sailing Ships	240	196	61,672	64,953
Grand Total	405	305	204,061	155,051

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
126	ENGLAND—East Coast—Harwich (Dovercourt)	Alteration of light.
127	" South Coast—Brixham Harbour	Alteration of light.
128	" West Coast—Milford Haven	Torpedo ground in Sand Haven Bay.
129	NETHERLANDS—Zuiderzee—Kraggenburg	New lights.
130	NORTH SEA—Denmark—Horn Reef	Buoy on West end.
131	BALTIC ENTRANCE—Kattegat—Scaw Reef	Establishment of a new light-vessel.
132	" Skagerack — Christiania Flord—Dröbak	New light.
133	" Great Belt—Masnedo	Rock blown up.
134	" " Elephant-Islet	New buoy.
135	" Sound — Drogden Channel	New bell-buoys.
136	BALTIC—Gulf of Danzig—Rixhöft	New fog-signal.
137	SPAIN—North Coast—Tazones	Light re-established.
138	ADRIATIC—Quarnero Gulf—Zaglava Rock	Alteration of light.
139	" " Gruizza Island	Alteration of light.
140	" Port Parenzo	Alteration of light.
141	" Port Veruda—Verudella Point	Additional particulars of light.
142	" Port Volosca	Light established on mole.
143	EASTERN ARCHIPELAGO—Sumatra—Telok Betong	New light.
144	" Borneo — West Coast	Discovery of coral bank.
145	CHINA—East Coast — Yangtse-Kiang — Kiu-toan	New light-vessel.
146	AUSTRALIA—Victoria—Cape Barwon	Automatic signal buoy.
147	NEW ZEALAND — North Island — Pauhehe Spit	Additional particulars of light.
148	" " Portland Island	Light established.
149	" Middle Island—Cape Wanbrow	Additional particulars of light.
150	" " Grey River	Intended alteration of lights.
151	CANADA—Bay of Fundy—Petit Coudiac River—Grindstone Island	New fog-signal.
152	" Gulf of St. Lawrence—Prince Edward Island—East Point	Alteration of light.

NAUTICAL NOTICES.

126.—ENGLAND.—*East Coast.*—*Alteration of Harwich (Dovercourt) Lights.*—The high light at Dovercourt has been changed, the arc over which it shows has been altered, and the power of it

increased. The light is now visible between the following bearings from the lighthouse, viz., from N. 79° E. (marking the *northern* edge of the Cutler, and the *southern* spit of the Whiting bank), round easterly to S. 2° E.

127.—ENGLAND.—*South Coast.*—*Alteration of Light at Brixham Harbour.*—From the 1st June, 1878, the red light on the inner pier head will be discontinued, and a *fixed green* light will be shown in its place. Also, a *fixed red* light, visible 8 miles from all parts of the horizon, will be shown from the new works at the end of the breakwater.

Note.—To clear Shoalstone point, vessels intending to enter the outer harbour should not bring the breakwater light to bear westward of S.W. ; and vessels intending to enter the inner harbour should steer for the green light, leaving it on the starboard side a few feet.

128.—ENGLAND.—*West Coast.*—*Milford Haven.*—*Torpedo Ground in Sand Haven Bay.*—Sand Haven bay, on the north shore of Milford haven, is now appropriated for torpedo practice. A conical buoy, painted *green* and *white* in horizontal bands, marked *Torpedo mooring ground*, will be placed in 5 fathoms water, in a line midway between Great Castle head and Stack rock, to mark the south-western limit within which torpedo experiments will be made.

Caution.—Mariners are warned not to anchor or pass inshore of the lines joining Great Castle head high lighthouse to Stack rock fort, and thence to the east extreme of South Hook fort. Small vessels bound to or from Sandy Haven pill may pass within the torpedo ground, but should keep on the western shore of Sand haven bay.

129.—NETHERLANDS.—*Zuiderzee.*—*Light at Kraggenburg.*—A harbour light is now exhibited at Kraggenburg, in the Zwolsche Diep, Zuiderzee. It is a *fixed white* light, elevated 26 feet above high water, and is shown from the roof of the keeper's dwelling, near the head of the south dyke, in lat. 52° 39' 18" N., long. 5° 56' 20" E. Also, a *fixed red* light will be temporarily shown when the jetties are covered by high water: the lamp-post of this light stands on the outer end of the jetty in front of the above-mentioned

keeper's dwelling; the red light is lower than the white light. Close to the house are a *fog-bell* and signal mast.

180.—NORTH SEA.—*Denmark*.—*Beacon on Horn Reef*.—A monster buoy, painted black and surmounted by a white pole with two brooms, points upwards, has been moored in 5 fathoms water, at the west extremity of the Horn reef. The words "Horn Rev" are marked on the buoy in white letters.

181.—BALTIC ENTRANCE.—*Kattegat*.—*Light-vessel on the Scaw Reef*.—A light-vessel will be placed at the outer end of the Scaw reef on the 1st June, 1878; it will show a *red revolving* light, flashing every 30 seconds; also, a siren trumpet will give a powerful blast every two minutes during thick and foggy weather. Further particulars next month.

182. — BALTIC ENTRANCE.—*Skagerack*.—*Christiania Fiord*.—*Light at Dröbak*.—A light has been established on the balcony of the custom-house at Dröbak. It is a *fixed red* light, elevated 24 feet above the sea, and visible 6 miles between S. $\frac{1}{2}$ W. and N.N.W. round by West. Position, lat. $59^{\circ} 39' 80''$ N., long. $10^{\circ} 38' 10''$ E. Variation, $14\frac{1}{2}^{\circ}$ W.

183.—BALTIC ENTRANCE.—*Great Belt*.—*Rock near Masnedo Islet, Denmark*.—The rock N.W. of Masnedo islet, on which were 7 feet of water, has been blown up, and there is now a depth of 2 fathoms over the spot.

184.—BALTIC ENTRANCE.—*Great Belt*.—*Beacon on Elephant-Grund, Denmark*.—The beacon on Elephant-grund has been replaced by a monster buoy painted in black and white bands, surmounted by a white pole and red wicker work; it is moored in 6 fathoms, about $\frac{1}{2}$ a mile W. $\frac{1}{2}$ N. (true), from the bank.

185.—BALTIC ENTRANCE.—*Sound*.—*Bell Buoys in Drogden Channel*.—The Middle-grund, fronting Copenhagen, and the Kastrup Knæ in the Drogden are now marked by bell-buoys.

186.—BALTIC.—*Prussia*.—*Gulf of Danzig*.—*Fog-Signal at Bixhöft*.—The signal is a siren of the first class, worked by compressed air, and will give, during thick and foggy weather, a blast of *five seconds' duration every minute*. Under unfavourable circumstances these blasts should be heard from a distance of 8 miles.

137.—SPAIN.—*North Coast.*—*Re-exhibition of Tazones Point Light.*—With reference to Notice No. 57, p. 288, on the temporary discontinuance of the light on Tazones point (Villaviciosa), pending the restoration of the illuminating apparatus,—the apparatus has been replaced, and the light was re-exhibited on 7th March, 1878. It is a *fixed white* light, elevated 220 feet above the sea, and visible 7 miles.

138.—ADRIATIC.—*Gulf of Quarnero.*—*Intended Alteration in Zaglava Rock Light.*—It is intended to make the following alteration (now being carried out) in the interval of the flashes of the light exhibited on Zaglava rock, Cherso island :—The light (fixed white varied by flashes) will show *white* flashes *every minute*, instead of every ninety seconds as previously.

139.—ADRIATIC.—*Gulf of Quarnero.*—*Intended Alteration in Gruizza Island Light.*—It is intended to make the following alteration (now being carried out) in the interval of the flashes of the light exhibited on Gruizza island :—The light (fixed white varied by red flashes) will show *red* flashes *every minute*, instead of every ninety seconds as previously.

140.—ADRIATIC.—*Port Parenzo.*—*Alteration in Harbour Light.*—The following alteration has been made in the colour of the light exhibited on the mole head, Port Parenzo :—It is a *fixed red* light, instead of red and white as formerly.

141.—ADRIATIC.—*Port Veruda.*—*Verudella Point Light.*—*Additional Particulars.*—The light (*fixed red*) is visible from seaward through an arc of 144° , or between the bearings of S.E. $\frac{1}{4}$ E. and N. by W. $\frac{1}{4}$ W.; from N. by W. $\frac{1}{4}$ W. it is obscured through an arc of 60° , or to the bearing of W. by N., and is again visible towards Port Veruda.

Note.—As foul ground extends off Verudella Point, vessels should not round it at a less distance than 1 cable. *Variation*, $11\frac{1}{2}^{\circ}$ W.

142.—ADRIATIC.—*Port Volosca.*—*Light on New Mole Head.*—In place of the provisional light at Port Volosca, a light is now exhibited from an iron standard on the new mole head. It is a *fixed* light, showing *red* from seaward between the bearings of N. 25° E. and N. 65° W., and *white* over the remaining portion of the horizon; elevated 18 feet above the sea, and visible about 3 miles.

Position (approximate) lat. $45^{\circ} 21' 5''$ N., long. $14^{\circ} 19' 30''$ E.
Variation, $10\frac{1}{4}^{\circ}$ W.

143.—EASTERN ARCHIPELAGO.—*Sumatra*.—*Light at Telok Betong*.—A harbour light has been established on the outer end of the landing place of Telok Betong, Lampong bay, south coast of Sumatra. It is a *fixed red* light, elevated 56 feet above high water, and visible 9 miles. The lantern is supported on an iron post resting on a stone pedestal painted white and 40 feet high. Position, lat. $5^{\circ} 27' 15''$ S., long. $103^{\circ} 16'$ E.

144.—EASTERN ARCHIPELAGO.—*Borneo*.—*West Coast*.—*Shoal*.—A coral bank about 100 yards in diameter, with barely 6 fathoms water on the shoalest part, has been discovered off the west coast of Borneo, in lat. $5^{\circ} 39' 30''$ N., long. $115^{\circ} 28'$ E.

145.—CHINA.—*East Coast*.—*Yangtse-Kiang River*.—*Kiu-Toan Light-Vessel*.—With reference to Notice No. 94, p. 389, on 1st March, 1878, a light was exhibited from a light-vessel moored in mid-channel, north-eastward of Kiu Toan-Lighthouse, Yangtse-Kiang river. It is a *fixed white* light, elevated 35 feet above the sea, and visible 11 miles. A white riding light is also exhibited from the forestay, 6 feet above the rail. The light-vessel, painted red, with the words Kiu-Toan in white letters on her sides, has one mast, with an 8-feet black globe at mast-head.

Note.—If the light-vessel should be driven from her station to one where she would not serve as a guide to shipping, the usual light will not be exhibited, but a *fixed red* light will be shown from the bow and stern. By day the globe will be struck as soon as possible, and until struck a red flag will be shown above it. On the exhibition of this light, the fixed and flashing light previously shown from Kiu-Toan lighthouse was discontinued. Also, during thick and foggy weather, a 10-cwt. fog-bell on board the light-vessel will be struck *three double blows every minute*; the interval between the blows in each pair will be *five seconds*, and between two successive pairs of blows *fifteen seconds*.

146.—AUSTRALIA.—*Victoria*.—*Port Phillip*.—*Automatic Signal Buoy, near Cape Barwon*.—An automatic signal buoy has been moored in 12 fathoms water, about $1\frac{1}{2}$ miles S.E. of cape Barwon. Masters of vessels are particularly requested to report to the

harbour-master of Melbourne on the efficiency of this buoy, indicating the direction of the wind, the weather, state of the sea, &c.

147.—NEW ZEALAND.—*North Island.—East Coast.—Particulars of Pauhenehe Spit Light.*—The *fixed white* light exhibited at the outer extreme of Pauhenehe spit, southern point of Ponui pass, Tehmaki strait, is elevated 50 feet above high water, and is obscured over Pahiki island. The lighthouse is an open frame structure supporting the keeper's dwelling, which is painted white and surmounted by the lantern.

148.—NEW ZEALAND.—*North Island.—East Coast.—Light on Portland Island.*—With reference to Notice No. 72, p. 293, on the intended exhibition of a light from a lighthouse in course of construction on the south point of Portland island, north point of entrance to Hawke bay, the light was exhibited on 10th February, 1878. It is a *revolving white* light, attaining its greatest brilliancy every *thirty seconds*, elevated 300 feet above the sea, and visible 24 miles. From the lower part of the lighthouse, a *fixed red* light visible through an arc of about 6° , is shown in the direction of Bull rock, which bears N.E., 4 miles distant. The lighthouse, 28 feet high, is built of wood and painted white. Position, approximate, lat. $39^{\circ} 18' S.$, long. $177^{\circ} 53' E.$ Variation, $14\frac{3}{4}^{\circ} E.$

149.—NEW ZEALAND.—*Middle Island.—East Coast.—Particulars of Cape Wanbrow Light.*—The *fixed white* light exhibited on Cape Wanbrow, Oamaru, should be visible from seaward in clear weather, through an arc of 146° , or between the bearings of N.N.W. and S. by W., from a distance of about 15 miles. Cape Wanbrow, bearing S. by W., indicates the outer anchorage of Oamaru. Variation, $16\frac{1}{2}^{\circ} E.$

150.—NEW ZEALAND.—*Middle Island.—West Coast.—Grey River Entrance.—Intended Alteration in Harbour Lights.*—On the south shore of Grey river, there will be exhibited two *fixed red* lights, instead of one fixed red and white as at present. A *fixed green* light will also be shown from the extremity of the harbour works in progress there. On the north shore of the river, the harbour light (*fixed white*) will be shown from the flagstaff, as heretofore. Also, consequent on the shifting of the channel of

Grey river, a flagstaff has been temporarily placed on the south shore, from which *tidal signals* will be shown and the depth of water indicated.

151.—CANADA.—*Gulf of St. Lawrence.—Prince Edward Island.*
—*Alteration of East Point Light.*—On 1st June, 1878, the following alteration will be made in the character of the light exhibited on East point, Prince Edward island:—It will be a *revolving white* light, attaining its greatest brilliancy *every three minutes*, instead of fixed white as at present, and should be visible 17 miles.

152.—CANADA.—*Bay of Fundy.—Petit Coudiac River Entrance.*
—*Fog-Signal at Grindstone Island.*—Since 15th April, a fog-signal has been established at Grindstone island lighthouse, west side of entrance to Petit Coudiac river; it is a trumpet, which, during thick weather, fogs, and snow storms, gives *four blasts every minute*.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDRO-
GRAPHIC OFFICE, ADMIRALTY, 1878.

No. 6.—CHINA SEA DIRECTORY, Vol. II., Notice 16, Borneo, North-West Coast, Sarawak River, &c.

No. 7.—AUSTRALIAN DIRECTORY, Vol. I., Notice 3, Banks Strait, and Tasmania, North Coast.

No. 8.—NEW ZEALAND PILOT, Notice 5, North Island and Middle Island.

No. 9.—EASTERN ARCHIPELAGO, Notice 16, Java, Celebes, Sulu, Flores, and Banda Seas, Gillols passage, and Dampier Strait.

No. 10.—CHINA SEA DIRECTORY, Vol. IV., Notice 5, Korean Archipelego and Goto Islands.

No. 11.—CHINA SEA DIRECTORY, Vol. II., Notice 17, Gulfs of Siam and Tong-King, Hainan Strait, &c.

CHARTS, &c., PUBLISHED BY THE HYDROGRAPHIC OFFICE,
ADMIRALTY, IN MARCH AND APRIL, 1878.

- 455 North America, west coast :—Anchorage on the coast of California and Oregon ; Hunter and Chetko coves, Mack reef, Crescent city, Trinidad harbour, and Mendocino bay ... 1 6
- 764 Pacific ocean :—New Hanover, New Ireland, and New Britain—with plans of North, Holz, and Katherine havens ; port Hunter ; Blanche bay ; and Expedition bay and Water haven ... 1 6 .
- 1763 China, east coast :—Wan-chu river and approaches 2 6
- 818 China, east coast :—Channels between Red Yit and Rugged island ... 1 6
- 372 Japan, Kiusiu :—Gulf of Kagosima, with plan of Yamagawa harbour ... 1 6
- 1378 Sandwich islands :—South coast of Oahu, with plans of Ewa or Pearl river, and Honoruro harbour ... 1 6
- 1638 United States :—Breton sound to Dernière island, including the delta of the Mississippi ... 2 6
- 703 Madagascar :—Minow islands. A plan of Diamond bay has been added.
- 178 Algeria :—Plans of Marsa el Kiber and Oran have been removed, and plans of Raschgoun island and entrance to Tafna river, Hibibas island, and Nemours, placed on this chart.
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OUR OFFICIAL LOG.

REGULATIONS FOR THE NAVIGATION OF THE SUEZ MARITIME CANAL.*

Art. 1.—Before entering the Canal, captains of ships shall bind themselves, on receiving a copy of the present regulations, to abide by and conform themselves in all points to all required arrangements made in view of the execution of these regulations.

Art. 2.—The Suez Canal having a depth of 26 ft. 3 in. throughout its entire length, is open to ships of all nationalities, provided their draught of water does not exceed 24 ft. 7 in. Sailing vessels above fifty tons are bound to be towed through. Steam vessels may pass through the Canal by means of their own steam power, or be towed subject to the conditions hereafter noted.†

Art. 3.—The maximum speed of all ships passing through the Canal is fixed at ten kilometres, equal to $5\frac{1}{2}$ nautical miles per hour.

Art. 4.—Every vessel measuring more than one hundred (100) tons gross must take on board a Company's pilot for the whole length of the Canal. Pilots place at the disposal of captains of vessels their experience and practical knowledge of the Canal; but, as they cannot be specially acquainted with the defects or peculiarities of each steamer and her machinery, in stopping, steering, &c., the responsibility, as regards the management of the ship, devolves solely upon the captain.

Art. 5.—When a ship intending to proceed through the Canal shall have anchored either at Port Said or Suez, the captain must enter his ship at the Transit Office and pay all dues for passage, pilotage, towage, and berthing, and the following written information must be handed in by the captain: Name and nationality of the ship; names of the captain, owners, and charterers; ports of

* These regulations are to come into force on and after the 1st of July, 1878. Previous regulations are hereby annulled.

† The towage of steamers through the Canal is not compulsory on the Company; it will only be performed in so far as they have unengaged tugboats.

sailing and of destination; draught of water; number of passengers; statement of crew; capacity of the ship according to the legal measurement ascertained by producing the special Canal certificate, or the ship's official papers established in conformity with the Rules of the International Tonnage Commission, assembled at Constantinople in 1878.

Art. 6.—The Company determine the hour of departure of each ship and her subsequent stoppages at sidings. Therefore no ship can require as a right an immediate passage through the Canal, neither will any claim be admitted in connection with any delay originating from the foregoing causes.

Art. 7.—All ships on entering the Canal are to be prepared by bracing their yards forward, running in their flying-jib and jib-booms and swinging their boats in board. In addition to their two bow anchors they must carry at the stern, ready for letting go at the request of the pilot, a strong kedje with a stout hawser bent on sufficient to hold the ship.

Art. 8 § 1.—During a ship's passage through the Canal, she must have a boat towing a-stern containing a hawser in readiness for being promptly fastened to any mooring post on either side of the Canal. § 2. The captain is required to establish a watch both by day and night; the men to be in readiness to ease away or cut hawsers as may be required. Every ship made fast on four hawsers must slacken those moored to leeward, in order to give free passage to tugs, steam launches, hopper barges, and any other craft of a light draught. § 3. Navigation by night time is only authorized under exceptional circumstances and under the captain's full responsibility, assumed in writing as far as any delay, mishap, and damages that might happen to his own ship are concerned, as well as such aforesaid occurrences as he might cause to other ships in transit or to the Company's craft and plant to be found in the Canal.* While navigating by night time under the above authorized conditions, ships must carry their usual lights, and have a man on the look-out forward. Ships moored during night

* Navigation by night time and by foggy weather in the Bitter Lakes is also but exceptionally authorised and under the same conditions.

time must show a white light forward and another aft, with the usual look-out. At the approach of tugs, steam launches, hopper barges, &c., or of a ship empowered to pass them, they must show the side for free passage by exhibiting on such side two white lights. § 4. All steamers, tugs included, must blow their steam whistles when approaching the curves of the Canal, also when passing in either direction boats or lighters, dredgers or any thing else afloat. They must stop when the Canal appears not to be clear. They must pass along all sidings, stone or earthwork yards, vessels made fast or under weigh, hopper barges, dredgers, and any other craft at a reduced speed. § 5. Whenever a collision appears probable no ship must hesitate to take the ground and thus avoid the collision. The expenses consequent upon a grounding under these circumstances shall be defrayed by the ship in fault. § 6. When two vessels proceeding in an opposite direction are in sight of each other they must both decrease their speed, and hug the starboard shore or stop if so required by the pilot. § 7. Ships proceeding in the same direction are not allowed to pass each other in the Canal; this, when necessary, can only be effected at the sidings, under the immediate management of the Canal Company's employés.

Art. 9.—When circumstances arise that oblige a ship to stop during her passage through the Canal, and when a siding is not at hand, which must always be reached if possible, the captain must make fast a-head and a-stern to the weather bank, showing the proper signal by day, and two lights by night, forward and aft as already mentioned. In the event of a grounding the agents of the Company alone shall have the right to direct all operations by which a vessel is to be floated off again, to unload and tow the vessel as may be necessary, by means of the plant and stock which the Company has at hand, at the expense of the vessel, unless it be regularly proved that there was an insufficient depth of water in the Canal, or that erroneous direction by the pilot had caused the grounding. The aforesaid costs of floating, towing, discharging, and reloading, &c., must be paid before the departure of the ship from Port Saïd or Suez.

Art. 10.—The following prohibitions are hereby notified:

§ 1. The overloading of the deck, before entering the Canal, with coals or other merchandize to such an extent as to compromise the general stability of the vessel. § 2. The anchoring of a ship in the Canal, except through unavoidable circumstances, and then only with the consent of the pilot. § 3. Throwing into the Canal earth, ashes, cinders, or material of any kind. § 4. Picking up, without the direct intervention of the Company's agents, anything that may have fallen into the Canal. Should any material of whatever kind fall overboard, the circumstances are to be immediately made known to the pilot, who is instructed to transmit such information to the Company's agent at the nearest station. The recovery of all material that has fallen into the Canal, whatever may be the attendant circumstances, shall be carried out at the expense of the captain, to whom such material will be restored when the aforesaid expenses are paid thereon. § 5. It is expressly forbidden, and on penalty of legal proceedings, to masters of ships while in the Canal or in the ports or sidings thereunto appertaining, to allow shots being fired from board ship.

Art. 11.—1. The net tonnage resulting from the system of measurement laid down by the International Commission of Constantinople, and inscribed on the special certificates issued by the competent authorities, or on the ship's official papers, is the basis for levying the special navigation due of ten (10) francs and the surtax of three (3) francs, already reduced to two francs fifty (2 fr. 50), and further reducible at the periods stipulated by the Convention of February 21st, 1876, approved of the 30th March, 1877, by the Sublime Porte. 2. The Canal authorities may ascertain whether cargo or passengers are carried in any spaces which have not been included in the gross measurements, or which were allowed as deductions for the accommodation of the crew after measurement, or which being within the engine, boiler, or bunker space, form no part of the net tonnage shown on the certificate. 3. Every vessel not provided with a special certificate or official papers giving the net tonnage laid down by the Constantinople Commission, shall be measured by the Company's agents in conformity with the Constantinople rules, and shall pay her dues according to such measurement, until she produces a special

certificate from the authorities of her own country. 4. Vessels of war, vessels constructed or chartered for the transport of troops, and vessels in ballast are exempt from the surtax: said ships pay the special navigation due of ten (10) francs per ton on the net tonnage defined by the Constantinople Commission. 5. Any ship carrying mails or passengers, or having in her holds coals or other merchandise in whatever quantity, is not considered as being in ballast. 6. The charge of ten (10) francs per passenger above twelve years of age, or of five (5) francs per passenger from 8 to 12 years old, as well as the transit dues, must be prepaid on entering the canal at Port-Saïd or Suez. 7. The berthing or anchorage dues at Port-Saïd, Ismaïlia, and opposite the Company's embankment at Suez are fixed at 0 fr. 02 centimes per day per ton after a stay of twenty-four (24) hours and for an unlimited time, the berth of the ship being assigned to her by the harbour-master. The amount to be collected every ten days. 8. Errors in the declaration of tonnage or in the levying of the dues must be rectified within a month after the ship's passage through the Canal. After this delay rectifications will not be admitted.

Transitory Provisions.—A surtax of four (4) francs, in addition to the tax of ten (10) francs, shall be levied per net register ton on steamers whenever the deductions due to engines have been determined under § A of clause XXIII. of the British Act of 1854 defining rule III.* The gross tonnage of ships not measured under Moorsom's system is brought into accordance with that system by the application of the Lower-Danube scale of factors, and their net tonnage is determined according to § A of clause XXIII. of the above-named British Act; they shall pay, over and

* The Constantinople decision has provided no reduction of the surtax of four (4) francs. The Company thinking that ships would provide themselves within the least delay with the special tonnage certificates prescribed by the said decision, has allowed a reduction of 50 centimes per ton on ships bearing former official papers.

From and after the 1st of January, 1879, every vessel not bearer of a Suez Canal special tonnage certificate, shall pay the full surtax of four 4) francs.

above the tax of ten (10) francs, a surtax of four (4) francs per ton on their net tonnage.

Art. 12.—The charges for towage in the Canal by the working stock of the Company are fixed as follows:—For sailing vessels measuring 400 tons and under, 1,200 francs; for sailing vessels measuring above 400 tons, 1,200 francs for the first 400 tons and 2½ francs for every surplus ton. For steamers measuring above 400 tons, 2 francs per ton, without any distinction, upon their whole tonnage, but on the condition that they use their propelling power, or keep it in readiness for assisting the tug. Steamers measuring under 400 tons, also steamers not intending to give the assistance of their propelling power will pay the same as sailing vessels. The charges for towage in the roads are fixed as follows:—For steamers or sailing ships, without distinction, 0 fr. 25 centimes per ton of net tonnage, for the distance between the inner basins and the end of the jetties and reciprocally: the amount levied never to be under fifty (50) francs. For towage to a greater distance the amount shall be settled by private agreement. In the event of compulsory stoppage or grounding in the Canal, or in the ports thereunto appertaining, the agents of the Company shall have the right to employ, of their own accord, a tug to re-establish a free passage and thus avoid delaying other vessels; all charges to be defrayed by the ships thus assisted in conformity with Article 9. The charge under the circumstances now described will be for every twelve hours:—A tug of the first class, 1,200 francs; a tug of the second class, 800 francs. Whenever a ship shall have been floated off, and continued her route under tow of a tug, she must in addition defray the services of the tug according to the tariff of charges. When a ship shall require a tug to accompany her, the charge for such services will be 1,200 francs a day for a tug of the first class, and 800 francs a day for a tug of the second class. In the event of a stoppage the tug will render assistance in getting the vessel under weigh, each time that it may be necessary. If the vessel is towed any distance exceeding that of one station from another, the charge for towage may be demanded in lieu of the tariff fixed for accompanying her. It is hereby provided that when a tug shall only have accompanied

or towed a vessel one-half of the length of the Canal, 600 francs shall be levied for the return trip of a first class, and 400 francs for a second class tug, and one-half only of the total towage dues shall be charged. No other division than that of half shall be allowed ; from Ismaïlia to Port Saïd being considered one-half on one side, and from Ismaïlia to Suez the other half, on the other side. All ships towed must furnish their own warps. Ships towed or accompanied by tugs belonging to their owners, will pay 0 fr. 50 cent. (fifty centimes) per ton as towage dues. Such tugs, whenever they shall tow or accompany vessels belonging to their own proper owners, will be free of any tax whatever. Whenever they shall go through the Canal for the purpose of meeting vessels of their owners which they are entitled to tow or accompany, or otherwise, returning to their usual residence after having towed or accompanied them through, said tugs shall not be submitted to payment of the special navigation dues, but they will be obliged to pay pilotage dues and take a pilot on board. Tugs in question are subject to berthing dues. Any transport of goods or passengers is prohibited to them ; the fact of having on board passengers or goods, would entail upon them the payment of all dues and charges to which ships in transit are subject. Whenever said tugs shall be used for towing or accompanying vessels not belonging to their own proper owners, the same dues and charges shall be levied on them as on ships in transit.

Art. 13.—The pilotage charges for traversing the Canal are levied according to draft of water, and are as follows : All ships whose draft of water is 3 metres or under, 35 francs for each decimetre of immersion ;

All ships drawing from 3 m. to 4 m. 50 ... 10 fr. per decimetre.

All ships drawing from 4 m. 50 to 6 m. ... 15 fr. per decimetre.

All ships drawing from 6 m. to 7 m. ... 20 fr. per decimetre.

Pilotage charges for entering the port of Port Saïd, and leaving the same, are fixed as follows :—

Pilotage by day-time : Steamers, 25 francs ; sailing ships, 10 francs. Pilotage by night-time, before sunrise and after sunset : Steamers, 50 francs ; sailing ships, 20 francs. The payment of the pilotage charge for entering the port of Port Saïd,

and leaving the same, is compulsory on every ship measuring one hundred (100) tons gross and upwards. Whatever length of time ships may stay in the harbour of Port Saïd, and whatever commercial operations they may transact there, total remission will be made of the pilotage charges for day-time entrance, or remission of half the charge for night-time entrance, provided that *immediately on arrival in port* it be declared either to the pilot in charge, or to the company's agency, that they are intended for transit. In default of such declaration, pilotage charges for entrance in harbour incumbent on non-transiting vessels shall be levied. The charge for pilotage by night time on entering the port of Port Saïd, or leaving the same, is fixed as follows for ships performing the passage of the Canal: Steamers, 25 francs; sailing ships, 10 francs. Twenty (20) francs per day is levied for pilots kept on board in case of berthing.*

Art. 14.—The Company receive at their offices in Paris, payments in advance on account of transit and any other dues specified in the present regulations, either from shipowners direct, or through the medium of agents employed by shipowners, at their own risk and peril. The Administration in Paris will give, on receiving such amounts in deposit, *receipts of the same*, which can be handed over as cash to the Company's agents in Egypt entitled to collect the dues. The Company's agents entitled to collect the dues in Egypt, are moreover empowered *with respect to ships whose owners have made the above payments for transit in advance in Paris at the Company's cash-office*, to accept the captain's draft at sight on the owners for any balance that may be due for pilotage and other charges. In the event of payments in advance not being effected in time to remit *receipts* thereof to the captains, the company will inform, by telegraph, their agents in Egypt of the amounts so paid. The cost of telegrams to be defrayed by the shipowners. This

* In the pilotage charges are included remuneration for maintenance of beacons, sidings, telegraphy, watchmen, signals and other means established by the Company along the Canal to ensure, in every way, the safety and good navigation of ships.

last clause is equally applicable to payments in advance made in Paris for dues of ships coming from beyond or eastward of Suez.

(Sigd.) FERD. DE LESSEPS,
President-Director.

Paris, March 12th, 1878.

Provisionally and until further orders, ships, barges, lighters and other craft, either coming in ballast or empty from Port Saïd under orders for Ismailia or returning from Ismailia to Port Saïd with cargoes of native produce; or bringing from Port Saïd to Ismailia cargoes bound to districts of Lower Egypt next to the Canal, and returning empty or in ballast from Ismailia to Port Saïd, shall be exempted, either outward or homeward bound, whether they be empty or in ballast, from the special navigation dues and shall only be subject to the payment of five (5) francs per ton and of the surtax settled by the Constantinople Commission, representing the special navigation dues on half the length of the Canal for their passage when loaded outward or homeward bound. Such toll is to be prepaid when said ships, barges, lighters, or other craft enter the Canal in ballast, or empty to go and take cargo of native produce at Ismailia as well as when loaded. As regards dues or charges other than the special navigation dues (viz.: berthing, pilotage, towage dues, &c.), said ships, barges, lighters or other craft are bound to pay them in full.

EXTRACT FROM THE REGULATIONS FOR THE MEASUREMENT OF TONNAGE
RECOMMENDED BY THE INTERNATIONAL TONNAGE COMMISSION,
ASSEMBLED AT CONSTANTINOPLE IN 1873.

General Principles.—1. The gross tonnage or total capacity of ships comprises the exact measurement of all spaces (without any exception), below the upper deck, as well of all permanently covered and closed-in spaces on that deck.

N. B.—By permanently covered and closed-in spaces on the upper deck are to be understood all those which are separated off by decks or coverings, or fixed partitions and therefore represent an increase of capacity which might be used for the stowage of

merchandise, or for the berthing and accommodation of the passengers or of the officers and crew. Thus, any one or more openings, either in the deck or coverings, or in the partitions, or a break in the deck, or the absence of a portion of the partition, will not prevent such spaces being comprised in the gross tonnage, if they can be easily closed in after admeasurement, and thus better fitted for the transport of goods and passengers.

But the spaces under awning decks without other connection with the body of the ship than the props necessary for supporting them, which are not spaces "separated off," and are permanently exposed to the weather and the sea, will not be comprised in the gross tonnage, although they may serve to shelter the ship's crew, the deck passengers, and even merchandise known as "deck loads."

2. "Deck loads" are not comprised in the measurement.

3. Closed spaces for the use or possible use of passengers will not be deducted from the gross tonnage.

4. The determination of deductions for coal spaces may be effected either by the rules of the European Danube Commission of 1871, or by the exact measurement of fixed bunkers.

Rule II.—For laden ships.—Art. 9. When ships have their cargo on board, or when for any other reason their tonnage cannot be ascertained by means of Rule I., proceed in the following manner:—

Measure the length on the upper deck from the outside of the outer plank at the stem to the aftside of the stern-post, deducting therefrom the distance between the aftside of the stern-post and the rabbet of the stern-post at the point where the counter-plank crosses it;

Measure also the greatest breadth of the ship to the outside of the outer planking or wales;

Then, having first marked on the outside of the ship on both sides thereof the height of the upper deck at the ship's sides, girth the ship at the greatest breadth in a direction perpendicular to the keel from the height so marked on the outside of the ship, on the one side, to the height so marked on the other side, by passing a chain under the keel; to half the girth thus taken add half the main breadth; square the sum, multiply

the result by the length of the ship taken as aforesaid ; then multiply this product by the factor 0·17 (seventeen hundredths) in the case of ships built of wood, and by the factor 0·18 (eighteen hundredths) in the case of ships built of iron. The product will give approximately the cubical contents of the ship, and the general tonnage can be ascertained by dividing by 100 or by 2·83, according as the measurements are taken in English feet or in metres.

Art. 10.—If there be a break, a poop, or other permanent covered and closed-in spaces (as defined in the general principles) on the upper deck, the tonnage of such spaces shall be ascertained by multiplying together the mean length, breadth, and depth of such spaces, and dividing the products by 100 or 2·83, according as the measurements are taken in English feet or metres ; and the quotients so obtained shall be deemed to be the tonnage of such spaces, and shall be added to the other tonnage in order to determine the gross tonnage or total capacity of the ship.

OFFICIAL INQUIRIES AT HOME, 1878.

(This List is completed to the 18th of each Month.)

62. *Stallingbro*, s.s., iron ; built at West Hartlepool in 1877 ; owned by Mr. J. Pyman and others, of Newcastle ; tonnage, 1085 ; Cardiff to Odessa ; coals ; abandoned and lost 50 miles S.W. of the Lands End, March 30, 1878. Inquiry held at Cardiff, April 27, 1878, before Rothery, Wreck Commissioner. Aplin and Jones, N.A. Loss attributable to overloading, and to proper measures not being taken to prevent the water getting into the vessel. Court also of opinion that ship was abandoned too hastily. Master's and mate's certificates suspended for three months.

187. *James Harris*, s.s., iron ; built at Middlesbrough in 1874 ; owned by Mr. J. Hogg and others ; tonnage, 577 : Soderam to England ; deals, &c. ; stranded on the Gnisvards Grund, November 5, 1877. Inquiry held at Middlesbrough, March 30, 1878, before Thompson and Stephenson, J.P. Knox and Wilson, N.A. Master severely censured for navigating with an incorrect chart.

203. *Cossack*, s.s., iron ; built at Hull, 1859 ; owned by Bailey and Leetham of Hull ; Hull to Pillau ; railway iron ; stranded on the N.W. reef of Læso Island, December 23, 1877. Inquiry held at Hull, April 20, 1878, before Travis, J.P. Hight and Knox, N.A. Master to blame for incautious navigation, certificate suspended for four months.

243. *Covenanter*, barque ; built at Perth, 1867 ; owned by James Scott and others of Dundee ; tonnage, 299 ; Pernambuco to Queenstown ; sugar ; lost off the Tuscar light, March 8, 1878. Inquiry held at Dundee, April 3, 1878, before Edward and Luke, J.P. Powell and Ward, N.A. Master guilty of unskilful and negligent navigation, certificate suspended for six months.

244. *N. & E. Gardner*, wood ; built at Tasket, Nova Scotia, 1864 ; owned by Mr. S. Killarn, of Nova Scotia ; tonnage, 1,465 ; Galveston to Liverpool ; cotton ; abandoned and set fire to at sea, March 14, 1878. Inquiry held at Liverpool, April 8, 1878, before Raffles, Stip. Mag. Harris and Grant, N.A. Vessel prematurely abandoned, the master blamed for setting fire to her. Certificate suspended for twelve months.

245. *Stromboli*, s.s., iron ; built at Glasgow 1856 ; owned by Burns and Mc Iver ; tonnage, 744 ; Havec to Liverpool ; cargo and passengers ; beached after striking the Marnheere Rock, near the Lizard, and eventually became a total wreck, March 20, 1878. Inquiry held at Liverpool, April 10, 1878, before Raffles, Stip. Mag. Harris and Grant, N.A. Master guilty of careless navigation in running in so dangerously near the land. Certificate suspended for six months.

246. *Laurel*, wood ; built at Sunderland in 1869 ; owned by Mr. J. Horan and others ; tonnage, 335 ; Sunderland to Damietta ; coals ; stranded on the Hasboro' Sands, March 28, 1878. Inquiry held at Harwich, April 17, 1878, before Vaux and Watts, J.P. Beasley and Jones, N.A. Master guilty of neglect in determining position of ship. Certificate suspended for three months.

247. *Elizabeth and Catherine*, barque ; built at Sunderland, 1865 ; owned by Mr. W. Kish and others ; tonnage, 348 ; Sunderland to Alexandria ; coals ; stranded near Littlestone Coastguard Station, March 30, 1878. Inquiry held at Dover, April 12, 1878,

before Court and Astley, J.P. Powell and Castle, N.A. Master in default for not using the lead, and for not taking cross-bearings. Certificate suspended for three months.

248. *Jessie Ann*, wood ; built at Banff in 1877 ; owned by Mr. J. Wood, of Portsoy ; tonnage, 180 ; Ayr to Königsberg ; coals ; lost on the coast of Denmark, March 20, 1878. Inquiry held at Banff, April 24, 1878, before Duncan and Rust, J.P. Foster and Burnett, N.A. Master guilty of wilful disregard of the ordinary rules of navigation, and neglect in not using the lead in thick weather. Certificate suspended for six months.

250. *Eirene*, iron ; built at Greenock in 1877 ; owned by Mr. Rankin and others ; tonnage, 1,107 ; Shields to San Francisco ; coals and coke ; lost at Cape Grisnez, March 30, 1878, when several lives were lost including the master and second mate. Inquiry held at Greenock, April 18, 1878, before Neill and Brymner, J.P., Ward and Visconti, N.A. Court considered that the lead should have been used, and added that after the casualty the master appeared to have done all in his power, and that the conduct of the second mate in making an attempt to swim ashore with a line was worthy of all praise.

252. *Clausina*, wood ; built at Sunderland 1864 ; owned by Mr. M. Flannigan ; tonnage, 461 ; Liverpool to Guayaquil ; general cargo ; lost off the Lenifa near the Gulf of Fonseca, December 31, 1877. Inquiry held at South Shields, April 20, 1877, before Yorke, Stip. Mag. Powell and Castle, N.A. Master free from blame. Certificate returned.

253. *Kinsembo*, s.s., and *Sevilla*, the former an iron vessel built at Port Glasgow, in 1876 ; owned by the British and African Steam Navigation Company ; tonnage, 1,868 ; Liverpool to West Coast of Africa ; cargo and passengers. The latter built of wood at St. Helier's 1859 ; owned by Mr. G. Turnbull, of Glasgow ; tonnage, 598 ; Sourabaya to Queenstown ; sugar ; in collision in Carnarvon Bay, April 6, 1878. Inquiry held at Liverpool, April 22, 1878, before Raffles, Stip. Mag. Grant and Wilson, N.A. Chief officer of *Kinsembo* in default for not keeping better look out. Certificate suspended for three months. Officers on board the *Sevilla* exonerated.

256. *Ardanach*, s.s., iron ; built at Port Glasgow 1878 ; owned by Mr. W. E. McLaren and others ; tonnage, 868 ; Glasgow to Bordeaux ; coals ; stranded on Laggon Rock near Corsewall Point, April 5, 1878. Inquiry held at Glasgow, April 26, 1878, before Coulborn and Somerville, J.P. Visconti and Ward, N.A. Charge against master not proved, but mate guilty of negligent and unseamanlike conduct. Mate's certificate suspended for three months.

256. *Corinth*, s.s., iron ; built at Wallsend-on-Tyne, 1873 ; owned by Messrs. Vellacott, of Cardiff ; tonnage, 287 ; Neath Abbey to Belfast ; coals ; lost on Brigg's Reef, County Down, April 8, 1878. Inquiry held at Cardiff, April 29, 1878, before Rothery, Wreck Commissioner. Aplin and Jones, N.A. Casualty due to negligent navigation on the part of the master in not making allowance for the set of the current, and in not verifying his position by cross-bearings. Certificate suspended for three months.

257. *Astarte*, s.s., iron ; built at Glasgow, 1870 ; owned by Mr. W. Donaldson ; tonnage, 868 ; Cardiff to Monte Video ; coals ; wrecked on the Ilote Rock, off Cape Polonio ; all hands but two lost. Inquiry held at Glasgow, April 23, 1878, before Coulborn and Young, J.P. Ward and Visconti, N.A. The Court considered that the master was over confident as to his position, and consequently omitted to use the lead, hence the casualty.

OFFICIAL INQUIRIES ABROAD.

Novelty ; wood ; wrecked near Keelung, Formosa. Naval Court held at Amoy, January 15, 1878. The Court expressed dissatisfaction at the want of a good hawser on board, but returned the master his certificate.

British Enterprise, ship ; damaged in a gale of wind off Algoa Bay. Inquiry held at King William's Town, February 26, 1878. Court expressed satisfaction at the prompt and energetic measures taken for the salvation of the ship. Master's and mate's certificates returned.

Rachel Cohen ; lost at Port McDonnell. Inquiry held at Port McDonnell, June 27, 1877. Vessel lost through mooring chains breaking.

Normanby, s.s.; struck on a sunken rock off the Pine Islets, August 13, 1877. Inquiry held at Brisbane, September 10, 1877. Great credit due to master for the manner in which he executed the necessary repairs and saved the ship.

Alcandre, schooner; stranded two miles S.W. of Cape Liptrap. Inquiry held at Melbourne, August 28, 1877. Master free from blame.

Sarah Watson; wrecked near Kisanapatam Port, December 13, 1877. Inquiry held at Madras, January 9, 1878. Loss attributable to thick weather. Master acted rather incautiously. Certificates returned to master and mate.

Teviotdale, ship; burnt in lat. $8^{\circ} 40'$ and long. $71^{\circ} 40'$ East; November 1, 1877. Inquiry held at Mauritius, January 18, 1878. Abandonment justifiable, and no blame due to anyone.

Mist, schooner; stranded at the entrance of the Manning River. Inquiry held at Sydney, January 21, 1878. Master not to blame.

Huon Belle, ketch; wrecked at Moeraki. Inquiry held at Oamaru, New Zealand, January 23, 1878. Master to blame. Certificate suspended for six months.

Nellie, schooner; lost on the Astrolabe Reef, January 13, 1878. Inquiry held at Tauranga, N.Z., January 24, 1878. Master to blame. Certificate suspended for one month.

Margaret Knight; stranded on a coral reef in long. $114^{\circ} 29' E.$, lat. $7^{\circ} 8' S.$ Inquiry held at Sonrabaza, January 30, 1878. Master blamed for error in judgment in attempting to run a dangerous passage at night. Certificate returned.

County of Peebles, ship; in collision with the schooner *Lucie Marie*, November 4, 1877. Inquiry held at Dunedin, Otago, New Zealand, February 2, 1878. Master entirely exonerated from blame.

Lubra and Wandering Minstrel; in collision off Queenscliff, February 2, 1878. Inquiry held by the Victoria Steam Navigation Board, February 7, 1878. Collision accidental, no default on the part of either master.

Leicester, ship; stranded on Gebi Island. Inquiry held at Singapore, February 8, 1878. Master to blame for keeping his vessel so dangerously near the island of Gebi; but in all the circumstances his certificate was returned.

Aberlady, barque ; wrecked on the Alceste Reef in the Gaspar Straits. Inquiry held at Singapore, February 11, 1878. Master to blame. Certificate suspended for six months.

Leo, s.s., and *Pluto*, s.s., steam tugs ; in collision, January 16, off Newcastle. Inquiry held at Newcastle, N.S.W., February 19, 1878. Master of *Pluto* to blame, and was severely reprimanded.

Minnie Graham, ship ; lost on the Hormigas Rocks, February 24, 1878. Inquiry held at Callao, March 6, 1878. Master to blame for erroneous navigation ; but it does not appear that any order was made as to punishment.

Mary Ann Wilson, barque ; lost on the Blenheim Reef, in the Macassar Straits. Inquiry held at Singapore, March 6, 1878. Master exonerated from blame.

Rose Middleton, s.s. ; stranded on the Munscar Rocks, March 7, 1878. Inquiry held at Malta. Master to blame for leaving the deck in charge of an unqualified person when running for the land. Certificate suspended for four months.

Mary Anne Johnstone, barque ; lost near South Point Lighthouse, Barbadoes. Inquiry held at Barbadoes, March 25, 1878. Master guilty of careless navigation. Certificate suspended for twelve months.

SIR WILLIAM MITCHELL.—We regret to have to record the death of Sir William Mitchell, on May 2nd, at his residence near Ivybridge, Devon. He was born in 1811, at Modbury, Devonshire, and early in life became connected with the London press. He was engaged on the *True Sun* for some time, and afterwards was editor and proprietor of the *Shipping and Mercantile Gazette*, which was established in 1836. He established in 1856 a weekly paper called *Mitchell's Maritime Register*. During his lifetime, Sir William took an active part in various movements connected with the Mercantile Marine, especially as regards the development of the International Code of Signals. In consideration of his services for the benefit of maritime interests, the Queen conferred the honour of knighthood upon him in 1867, and he received from the King of Sweden, in 1869, a knight commandership of the Order of St. Olaf. He was also a Fellow of the Royal Geographical Society.

THE SHIPMASTERS' SOCIETY.



N the 2nd of last month a very significant meeting, convened by the above Society, was held at the Cannon Street Hotel. The gathering was a large one and consisted of shipowners, shipmasters, and others connected with the Mercantile Marine. The object of the meeting was to protest against the Merchant Seamen Bill, and, judging from the opinions expressed, it would seem that a very general unanimity prevailed. The points discussed have been frequently dealt with in these pages, and need not now be further referred to beyond observing that the objections taken by us as to the application of the Employers and Workmen Act to seamen were fully borne out by numerous speakers. The real significance of the meeting appears to us to have been in the joint action taken by shipowners and shipmasters. Mr. Atkinson and Mr. Glover, both of the Shipowners' Society, spoke with much force at the meeting, and showed that the interests of the two classes are really identical. Whatever may be the result of the meeting as regards the Merchant Seamen Bill, the demonstration of united action on the part of owners and captains is an encouraging spectacle. The meeting and its success are due mainly to the spirited action taken by the Committee of the Shipmasters' Society.

We have been asked to announce that the Annual General Meeting of the Shipmasters' Society will be held at the Society's Rooms on the 17th instant.

THE NAUTICAL MAGAZINE.

FORTY-SEVENTH YEAR.

VOLUME XLVII.—No. VII.

JULY, 1878.

“GROSSER KURFÜRST.”

SUNK IN COLLISION WITH “KÖNIG WILHELM,” OFF
SANDGATE, MAY 31st, 1878.
(287 lives lost.)



ON the 31st May, 1878, in broad daylight, a German squadron, consisting of three iron-clads, was steaming gaily down the English Channel, on its way to the East, having received orders to call in passing at Plymouth and Gibraltar. These three ships were (A) the *König Wilhelm*, which is said to be the most powerful ship in the German Imperial Navy, and was originally intended for the Turkish Navy. It is said that her length was fixed by the then reigning Sultan of Turkey at 365 feet, being one foot for each day in the year; but why a number of feet equal to that precise number of days should be fixed on as a good number by which to determine the length of a ship of war, is not clear. It is probably, however, as reasonable and as good as many grounds on which the proportions of some of our own ships have been determined. Indeed, it may be possible that the occult influence of some circumstance or record, or some fanciful conceit, like the “number of the Beast” (which can be expressed in letters or figures, and may

signify something mystical or nothing at all), may have limited the number of feet in the breadth of our own *Inflexible* to its present otherwise unaccountable smallness. All this, however, is by way of parenthesis. The *König Wilhelm* was built from designs by Mr. E. J. Reed, C.B., M.P., while Chief Constructor of the British Navy, and she was built at the Thames Ironworks at Blackwall. The Government of the Sultan, for whom this ship was commenced, failed to meet their monetary engagements, as is a not uncommon circumstance with that Government, and the Germans became the happy possessors of her in embryo. A large staff was sent over from Germany to see her finished, and thus it came to pass that she was completed and turned out according to German views and methods, though built in the Thames. The breadth of beam of the ship is 60 feet, and she has a displacement of 9,600 tons. Her engines are of 1,150 nominal horse-power, 8,300 indicated, and were designed and built by Maudsley & Co. She was launched in 1868, is protected by plates of 8 to 10 inch iron, and armed with 18 guns of 14½ tons, and 4 or 5 guns of 9 tons, all made by Krupp. Her speed is about, perhaps a little above, 14 knots. She is full rigged, and has a ram formidable to her enemies, and dangerous to herself. The *Preussen* (B) and the *Frederick der Grosse* (D) are smaller than the *König*, they are sister ships of which the *Grosser Kurfürst* was a third; purely German in design and execution, being the direct offspring of the German Admiralty, and built at Stettin and Keil. They are turret ships and are fully rigged, somewhat resembling the *Monarch* in general appearance; their displacement is 6,700 tons, and their speed about 14 knots. For defence they have (irrespective of the armour on their turrets) armour plates from 7 to 10 inches, extending 6 feet below the water-line, with a backing of 10 inches of teak; and the hulls are divided into 12 watertight compartments by athwartship bulkheads. They have also double bottoms, which by longitudinal and transverse plates are converted into skins of water-tight cells. For offence there are the four heavy guns, carried two in each turret, and a bow and stern gun. The *Grosser Kurfürst* (C) was similar to the *Preussen* and *Frederick der Grosse*.

On the day of the casualty the three ships were steaming in what is called "two columns." The Admiral's ship, the *König Wilhelm* (A), and the *Preussen* (B), formed the port column; and the *Grosser Kurfürst* (C), by herself formed the starboard column. The *Frederick der Grosse*, which was to have sailed with her two sisters, stayed at home. The squadron was steering a little south of west, and had the wind aft. The following diagram will make the state of the case more clear:—

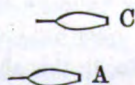
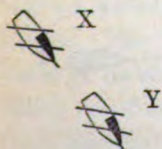


When sailing in this formation, C was about two ships'-lengths off A, and bearing slightly abaft the beam of A.

Eventually A ran into the port-side of C amidships, and sank her.

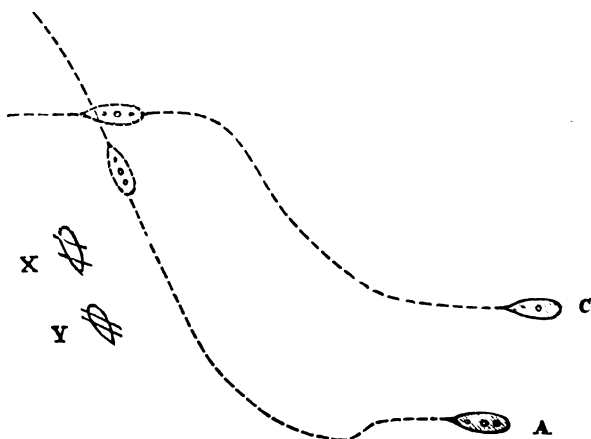
The catastrophe seems to have come about as follows:—

The steamers, as we have said, steering gaily along at full speed, with the wind aft, descried two sailing vessels somewhat on the starboard bow, crossing the track of the ironclads from right to left—that is to say, the two sailing vessels were close-hauled on the port tack. The ships were crossing ships, and it was clearly the duty of the steamers to keep out of the way of the sailing ships. The two steamers were practically one beside the other, whilst of the two sailing (X and Y) vessels, one was sailing before the other, thus *—



* It will be observed that we have adopted the symbols used by Mr. Thomas Gray in his last book on the Rule of the Road; X and Y are the symbols for "close-hauled port tack."—Ed.

There were two methods open by which A and C might have "kept out of the way" of X and Y. A and C might both have stopped and, if necessary, reversed; or A and C might, if they elected not to stop, both have altered their courses to the right so as to have passed under the sterns of X and Y. It appears that A and C did not elect to stop, but failing that, C being nearest to X and Y, first altered her course to the right. C, by this means, safely passed a-stern of X or of X and Y, and having passed a-stern by porting, resumed her original course by starboarding. A did not at once elect either to stop or to pass a-stern of X and Y, but first tried to pass a-head of Y. There were, it was found, neither time nor room for A to pass a-head of Y, but still A did not stop, but she then followed the example of C and ported, so that like C she might pass a-stern of Y or of X and Y. By this time, C having passed a-stern of Y, or X and Y, had resumed her course; and A by porting must, as a necessary consequence, if she continued long under her port-helm, cross the path of C, thus—



Indeed, the above diagram shows what happened. When the merchant ships were cleared, C saw A coming full tilt stem on, and C put on a spurt to try to go a-head; A by this time was, however, too close to her, and A had made an unfortunate blunder, for instead of steadying and getting into her original course *after*

passing X and Y and then starboarding, she (A) through some at present unaccountable confusion or fatality, kept on under more port-helm, and her ram, backed by about 10,000 tons of weight, and moving at a speed of ten knots per hour, took the *Grosser Kurfürst* a little aft of midships, and crushed her as an eggshell, and she disappeared in less than 15 minutes. She lies bottom upwards, resting on her two turrets, with a rip, or hole, cutting her in two pieces. The *König* (A) having driven her ram into a body that was moving at an angle to the line of her own (A's own) course, must also necessarily have suffered, and it is a matter of surprise, not that she suffered the serious damage she has suffered, but that she did not lose her own nose, and follow C to the bottom. To our mind it is not surprising that A was damaged; it is surprising that she is now afloat. When *Amazon* ran down *Osprey*, which was just a thin, slight merchant steamer, she lost her own nose, and went down too. Of course *Amazon's* ram was nothing like that of the ram of *König Wilhelm*, but then *Osprey's* side was nothing like the side of *Grosser Kurfürst*.

The official report made by Admiral Batsch to the Admiralty at Berlin says: “With regard to the cause of the collision, I can only state here that an order given by the officer of the watch to put the helm to starboard was misunderstood; and the helm, instead of being starboarded, was put hard-a-port, so that even reversing the engines was of no avail. The formation of the squadron was a double column, with the usual distances, but with a reduced distance of a hectometre (109 yards) between the two divisions. The *Grosser Kurfürst* was, however, considerably in advance of its station. Both the leading ships had to give way to a sailing vessel crossing their bows obliquely, and in doing so the *Grosser Kurfürst* particularly, shot far away to starboard. As soon as the ship had passed, the *Grosser Kurfürst* turned back again on to her course. The *König Wilhelm* purposed doing the same, when the putting the helm in the exactly opposite direction to that ordered took place, and immediately brought about the horrible catastrophe.”

The practical lessons to be learnt from this sad catastrophe, are :—

1. That the collision between *Iron Duke* and *Vanguard* no longer stands alone. It is no longer unique. The only element of difference between that case and this, is that the Germans have done in fine weather what the English required the assistance of a fog to accomplish.

2. That watertight bulkheads, and all the other structural safeguards, are of no avail when a ship, going at good speed, is hit fairly broadside on by the ram of another ship.

3. How lamentably weak is the underside of an ironclad ship, which now resembles more closely than anything in nature a turtle, retaining its shell on its back, with only a soft skin on its belly.

4. How great is the danger to the ship which is the rammer. The rammee may go down with certainty ; but the rammer stands a very good chance of going after her.

5. How little reliance can be placed in ship's boats in case of emergency. We have always enforced this point in opposition to the views of amateur legislators and pure philanthropists. There are persons who wish the Legislature to take steps to prevent any ships from going to sea unless sufficient lifeboats or rafts are carried to contain all persons on board. These well-intentioned but mistaken persons overlook the facts that such a law would reduce the number of passengers to an exclusive if not prohibitive minimum ; that the boats would cumber the decks or topsides and create danger where there is now safety ; that it is of no use to put people into open boats in many states of wind, weather, and sea ; and that let there be ever so many boats they invariably turn out useless in a sudden emergency away from land. There are many cases in which boats are of use it is true, and when they are fitted with the hooks of Messrs. Hill and Clark, as is the case with the ships in the British Navy, and with many of the best ships in the Mercantile Marine, so that they can be instantly disengaged, they occasionally render good service ; but in these cases the boats are either not all wanted at once, or there is time and there are opportunities for passing to and fro between the disabled ship and another ship, or between the disabled ship and the shore. It must, however, be accepted as a fact, a disagreeable

fact we must admit, that when people go to sea in a passenger ship the chances of their being saved in a sudden catastrophe by the ship's boats, or by anything, are too remote to be taken into consideration.

6. The way to prevent loss of life at sea is not to hamper the ship with innumerable contrivances, but is to instil into the minds of officers habits of forethought, and a necessity for coolness and calm judgment in danger, and *above all* a determination not to approach another ship or the shore so closely that a wrong turn of the helm or a turn too much will lead to danger.

7. The loss of the *Grosser Kurfürst* is clearly traceable to an error in judgment, and this circumstance leads us to call the attention of our readers to the monthly list of inquiries published by us, from which it will be seen that by far the great majority of casualties investigated are proved to have been caused by circumstances which human forethought, prudence, knowledge, or even common care might have met or avoided.

8. Lastly, how forcibly this casualty brings home to us the practical lesson that the height of folly has been reached in building huge, costly, unmanageable ships. Some day, common-sense will resume her sway in the matter of defensive armour for ships as it has for men. An armour-clad ship of ponderous size is, in its inconsistency and inherent absurdity, very much on a par with a knight in armour, cumbered with heavy weapons and compelled to carry about with himself food for himself and his horse. If, instead of continuing the present inheritance of incongruity, the Government were to strike out a new line whereby they should set afloat, instead of one leviathan, half a dozen floating ram gun-carriages, whose bottoms should be their strong part, whose power of offence should be a ram, supplemented by a heavy gun firing over it, or a heavy gun supplemented by a ram, it must be clear that for the money spent the result would be far greater, and that in the event of casualty, the loss of men and of money would be trifling. Such ships being mere gun-carriages, with the gun laid on a line above the keel, would require only a gun's crew as the fighting members, an engineers' crew as the working members, and a small number

of sailors and a couple of naval officers as the navigating members. The living accommodation could be reduced to a minimum, and the rest of the hull could be set apart for ammunition, of which the quantity would be comparatively small, and for coal which could be ample. This plan would, however, be scarcely acceptable to naval officers and sailors pure and simple, as it might necessitate the training of the engine-room hands to gun and rifle work, and the engineers to the steering and manœuvring of the ship in certain contingencies. It is, however, well to look facts in the face and to keep pace with necessity. We are by no means sure that the time is not coming when it will be found that for manœuvring a twin screw in action, stopping, reversing, turning, and so forth, all will have to be done by some one having the means of controlling the helm and the engines in his own hands; and all this can best be done by the officer on board who alone possesses not only the requisite mechanical knowledge, but who has acquired the necessary skill to apply that knowledge instantly. We need not point out that the engineer is this man, and is therefore the man for emergencies in the future.

In conclusion, it is our duty to state that we cannot speak in terms too high of the manner in which the officers and crews of the German squadron behaved on this trying occasion; they were seamen to the back-bone, and we can pay them no higher compliment—ready to live and fight, ready to die. While we cannot help admitting that confusion, or an error in judgment, originally brought about the casualty; and while we must maintain that "the Rule of the Road" is no way in fault in the matter,—we condole to the fullest extent with the relatives of the lost men, and with the brave nation whose ship and so many of whose gallant seamen are lost to them for ever. The British nation can sympathise with Germany in all sincerity, after our own deplorable losses of *Captain*, *Vanguard*, and *Eurydice*, and the gallant men who perished with them.

THE MERCHANT SEAMEN BILL, 1878.



ON the 17th of June, Lord Sandon, as President of the Board of Trade, announced to the House of Commons that, without being prepared to reject or adopt some important suggestions, he had not had time to form his judgment on the Merchant Seamen Bill, which had passed through the ordeal of a Select Committee, and been reported with some slight amendments, and he therefore postponed it to another Session.

At this point it is desirable to record the position of the question, that it may be fairly resumed from this departure.

The Bill had three objects in its view ; first, to put seamen on the same footing before the law as other workmen, so long as they are ashore ; secondly, to consolidate and amend the law of discipline at sea ; and thirdly, to improve the existing law as to payment of wages, so as to promote the security of a sailor's earnings from the license and demoralization of the system of plunder to which he is usually exposed at his discharge from a voyage.

The two first objects were much discussed in the Committee on the Merchant Shipping Bill of 1875. Sir William Harcourt, Mr. Gorst, and Mr. Burt proposed that there should be an alternative of forfeiture of wages for imprisonment in many cases of crime at sea, and that failing to join a ship should not be treated as a criminal offence, especially with summary arrest.

The Employers and Workmen Act, the same year made a workman's breach of contract generally the subject of civil remedy, and not of criminal proceedings ; but magistrates were still to imprison in case of non-payment of damages. From this Act seamen are excepted, the House consenting to this exception only on a pledge being given by the Home Secretary and the President of the Board of Trade that its removal, as far as possible, should be considered immediately. When the Merchant Shipping Act of 1876 was passed, the amelioration of the discipline law was also permitted to be postponed to be dealt with by a separate measure. The Bill just dropped would have redeemed both these Government pledges to the House of Commons, besides making a great improvement in the payment of

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wages. In introducing the Bill on the 21st of January, the then President of the Board of Trade, explained all its details, stating that after careful consideration, he had come to the conclusion that seamen might cease to be treated exceptionally so long as being on shore they were within reach of the Courts for breach of their agreement, and should be dealt with as other workmen, for instance, as navvies would be dealt with on absconding from an engagement for any undertaking; but that as soon as they were on board they must be under military discipline. The master of a ship at sea being responsible for the ship, the cargo, and the lives of all the passengers, must exercise a power necessarily discretionary and unlimited, except by his liability to an action for its abuse. The law of discipline afloat, so far from needing relaxation, was considered by the Royal Commission on Unseaworthy Ships, to be insufficient for safety. The relation between master and seaman in the Merchant Service is a subject of, perhaps, over legislation on both sides, and any special provision for discipline at sea is more than matched by extraordinary protection.

Two spoke on each side in the House of Commons debate on the introduction of this Bill. Mr. Norwood, representing the shipowners, deprecated any assimilation of what he called the servitude of seamen with that of other workmen ashore, and opposed the abolition of the power of arresting them without warrant, and of criminally prosecuting them for evading an agreement. With regard to the discipline clauses, he denied that any shipowners asked for them; and somewhat inconsistently said they had too many penal powers already. Mr. Gorst, on the other hand, complained of delay in this fulfilment of the Government promise to extend to seamen the Employers and Workmen Act of 1875, and the short space of time (namely, only while ashore), that they were to have that Act extended to them. Mr. Eustace Smith followed Mr. Norwood, and Col. Gourley took up Mr. Gorst's view.

The Select Committee, to which the Bill was referred, and whose report is just circulated, was also nearly equally divided between these two views. The Government, after calling the draftsman, Mr. Ilbert, to explain their Bill, left the Committee entirely to call their own witnesses, and the evidence and report fairly shows

that the fears on both sides were fallacious ; and that the Bill, which emanated with very slight alteration from the Committee, was tolerably safely guarded between the two extremes.

The shipowner's fear of losing the power of arresting without warrant a seaman shirking his engagement to join a starting ship, turned out to be a needless fear, as did also his apprehension that he should be deprived of his present habit of sending a runner round to public-houses, saying, "Come along, Jack," which he would have been able to do just as well when this Bill had become law. The terror of imprisonment which he feared would be lost, would be quite as effectual in the course of civil proceedings as of criminal. Both would alike be necessarily taken after the ship had sailed, and generally prison would be the end of both ; but according to the ordinary spirit of English law in the proposed process, and in violation of it in the existing treatment. The fact is that masters, by an extra day's wages and preparatory mooring of the ship, might generally get their men on board twenty-four hours before sailing, and so obviate the whole difficulty and danger under discussion. The crimp makes use of the threat of imprisonment to get the men at the last moment on board that he may cash their advance notes ; and the shipowner clings to this criminal treatment, which makes the crimp, in the most mischievous way, act as his policeman. A clause in the Bill completes the civil treatment of neglect to join a ship as a breach of contract, by enabling the master, on his side, to cancel the agreement if the seaman does not make his appearance when the time is up, and to take a substitute instead.

If the advance note could be made altogether invalid, it would serve greatly to the end in view, especially if, at the same time, allotment notes were made payable not only as now to relations, but also monthly at interest to the seaman's own account with a Government Savings Bank, up to the amount of half his wages. Cease making a seaman improvident by law, and you need not punish him criminally for acts and omissions which, in the case of other workmen, involve only a civil liability.

On the second point, the consolidation and amendment of the law of discipline at sea, the evidence of the draftsman before the Committee shows that the Bill proposed little more than making a clear arrangement of existing enactments, which, however, is an

essential condition in penal legislation. It gave an alternative of forfeiture of wages in some cases to imprisonment, and dealt more precisely than the existing law with mutiny and broaching of cargo.

On both points, the right of seamen ashore to civil remedies and their discipline afloat, the philanthropists or sticklers for justice could not fairly complain of the Bill, which, as the divisions taken in Committee show, went as far as could be maintained in argument, and stopped only where necessity required. They found that they were asking too much in proposing to extend the Employers and Workmen Act of 1875 altogether to seamen, whether ashore or afloat. A ship at sea with a mutinous crew, or driven into a port of refuge and there deserted by half the number of men engaged for the voyage, requires some stronger and prompter remedy than a civil action for breach of contract. There are outside third persons involved in the execution of these contracts, whose lives are at stake during the course of their performance. The discipline also tells equally against both of the contracting parties, the masters and men, in full proportion to their several responsibilities.

The Report of the Committee's proceedings, and their frequent divisions on clauses and amendments, suggest all the questions which can arise on this important legislation; and satisfactorily establish, in equal contest of opposite views and interests, the equitable treatment of the subject by the Bill.

The concluding clauses, enabling a seaman to receive a part of his wages due at his discharge so as to get home at once, and have the rest securely forwarded to him, so that he may not hang about the purlieus of temptation and plunder for several days, are most desirable. In the Appendix there is a proposed form for simple current account between master and man for this purpose.

Men like the Rev. Mr. Boyer and Captain Dawson are devoting themselves to such improvements of the law as this in the interests of the seaman class, which greatly need our national care, if we do not wish to see our shipowners compelled to take crews from foreign countries for the safety of their ships. In the cause of morality, and for the comfort of our sailors, and in the interests of our great Mercantile Marine service, we must see that the law does not itself engender much of the mischief now so seriously and

alarmingly complained of. Societies, and seamen's associations, sailors' homes, and training ships, may and will do much to raise the status of our Mercantile Marine; and, happily, men of all ranks and classes are heartily engaged in co-operation in this great national concern.

It is to be hoped, if this Bill is really a step out of vicious and meddling legislation into sounder and clearer principles of seaman's law—though ministerial changes and legislative obstruction have during this Session hindered its progress—it may have as early a start given to it in the next Session as it had in this, with the additional advantages of having passed scatheless through the ordeal of a Select Committee, and of the President of the Board of Trade, who must have charge of it, being now a member of the Cabinet.

Carlton Club, June, 1878.

NORTON.

OUR CARRYING TRADE DURING WAR.

WHATEVER differences of opinion may have of late existed, or may continue to exist, concerning the effective results of the modifications which, during the past 25 years, it has been attempted to introduce into International Law, there is likely to be a general agreement as to their tendency. In an age which has been illustrated by a remarkable succession of great wars, and of which a distinctive feature is the maintenance of armed forces upon a prodigious scale, there is some consolation to be found in noting that energetic and presumably honest attempts have been made by Governments to extend the scope of that part of the Law of Nations which deals principally with maritime affairs, and concurrently to reduce the area before given up to the anarchy of war. Every inch of ground gained for discussion as against conflict, every fresh fortifying of the sanctions of law, at the expense of mere fighting, and every substitution of convention and agreement for the argument of force, must be felt to be encouraging, not only as being worthy of and tending to advance our present civilisation, but also as promising to diminish the defence-

lessness—not of the weak alone—but of the wealthy, the un-aggressive, and the vulnerable. Cession of territory, as the inhabitants of this country have experienced, may in itself contain no injury to the nation of whom it is demanded ; on the contrary, like judicious pruning, it may improve the general health and productiveness ; but the destruction of the wealth accumulated by private citizens in any particular venture, if the history of war contain any lessons, is barren of effect upon the course of hostilities and is injurious, perhaps irreparably injurious, to the well-being of a people. When private property of all sorts was at the mercy of an invader, when ravaging a land was a more common military occupation than even fighting, the duration of wars was counted not by weeks, or months, or even years, but by decades and generations. This was the case in ages past ; and—as if to give emphatic confirmation to this easily-discovered historical law—that very war, during which, in our own day, there had been the greatest destruction of private property, the Secession contest in America, is the one which lasted longer than any conflict between civilised nations for half a century. If it be a mere truism to assert that the substitution of law for fighting is desirable, there is not the same self-evidence in the position, that in a war in itself justifiable—as some wars undoubtedly may be—to curtail certain belligerent rights is advantageous to both combatants, and not calculated to interfere with the real course of hostilities. Proof of the latter is offered by the histories of our wars with the first Napoleon, and of the war between the Northern and Southern States ; and proof of the former we may find in the fact that, no matter which side should win, permanent damage is less likely to result to either.

It is, of course, conceivable that Lord Clarendon, in adopting the principles of the Declaration of Paris, was actuated by a romantic feeling on behalf of the common benefit of humanity. Should it be our misfortune to engage in some war hereafter, either near or remote, it is pretty certain that his conduct will be imputed by our enemies to a Machiavellian policy of specious injury to other nations for his country's sole advantage. The truth probably is, that he rightly estimated the requirements

of England, that he judged her best interests could scarcely be incompatible with the general good, and that he took advantage of the amiable sentiments which were naturally prevalent at the conclusion of a general peace after a great war, and of the recorded opinions of certain sharers in the negotiations, at which he was assisting, to formulate an agreement which should benefit his own country without doing harm to others, and should push war farther along the path which in modern times it has had a tendency to take; a path which leads to its becoming more scientific, more warlike, in fact, and less predatory. High-flown maxims as to the propriety of concord between kindred nations may, no doubt, have influenced the negotiators of the Alabama Treaty, and abstract notions of justice may have been allowed to prevail over considerations of purely British interests in the minds of those who made the country submit to arbitration. If it were so, then in this case also it is singular that our cosmopolitan philanthropy should so soon have assumed an aspect of redounding to our own advantage. The most astute of diplomatists, with his country's interests alone in view, would hardly have devised a system of Maritime International Law more in accordance with his wishes than that to which we have alluded; a further proof of the general agreement of the higher interests of England with those of the world at large. The authors of the Geneva Arbitration are likely now to receive the reward which popular mistake long withheld from them, and the proceedings of the *Cimbria* may remind some that a due regard for the country's welfare was not necessarily at variance with an honest intention of removing all cause of irritation between two great nations.

It would be well that this should be borne in mind whenever the contingency of our being at war is contemplated. Irrespective of the greater or less imminence of a war with Russia now, it should be interesting to ascertain the position in which our ocean trade has been placed by the action of the Declaration of Paris and of the Alabama Rules, and by the even more important physical causes which have been at work in the case of navigation as well as in other branches of human industry. Our Mercantile Marine is not only actually larger at the present time than formerly, it is

also relatively so. Customers of every country in the world, we are also chiefly our own carriers. A great shipping business is maintained beneath our flag by the traffic between one foreign nation and another, as in the far East. It is essential to regard our merchant shipping under these different aspects, or it will not be easy to form a true estimate of the circumstances in which it is placed. As long as international obligations have any force, and even with the most flagitious Governments they are likely to have considerable force when founded upon a regard for the common good, the vast fleets of ships with which our commerce is covering the ocean are almost completely relieved from the fear of privateering attacks. A combination of circumstances illustrates this position in a specially significant manner as far as regards one important section of our foreign trade. Vast distances and rarity of coaling stations have caused the great Pacific trade—of which that in bread stuffs has recently risen immensely in importance—to still employ a large number of sailing vessels. It is these that would fall the easiest prey to the steam privateer. From that danger the Paris agreement has provided an effective protection. And the ports that line the coast by which the whole route from Magellan's Straits to Esquimalt are either situated in the United States, which honour and interest would alike bind to observe the Geneva rules, or in countries with whom the ascendancy of the great Republic is sufficient to make American views predominate. So that irregularly constituted ships-of-war, and even properly equipped and commissioned cruisers, would gain little advantage from attempting to use the few ports on the Pacific coast which are at all suitable for the purpose, as bases of operations against an enemy's commerce. To the latter also every advantage open to the former would be equally open. The increasing direct trade between San Francisco and the United Kingdom is chiefly carried on in British ships. Any circumstances which should suddenly take it from these would, it may be very likely, be viewed with unconcern or pleasure by American shipowners. But the sudden dislocation of a business, which she is already beginning to feel a necessity to her prosperity, would probably be so viewed in California that the voice of the "Pacific

Slope" population would call out loudly, and with every chance of being listened to, for a strict observance of neutrality obligations. We should not leave these considerations out of account in calculating the weakness of our naval position beyond Cape Horn. The flank of our mercantile fleets is exposed it is true, but the points from which it can be threatened are held either by those who have every inducement to refrain from permitting attacks upon it, or by those whose strength is not sufficient to enable them to defy accepted rules of international law with impunity. Yet weak as we are, by comparison, in that quarter of the globe, when we remember our strength elsewhere, we should not forget that no European nation has there a strategic position at all comparable with our own. France, it is true, has stations in the islands which, merely as regards situation, have a great strategic value; for—owing to the prevailing winds—ships homeward bound, when south of the line, have to stand far out on the port tack, and to approach the great Archipelago of Oceania. But the difficulties in the way of supplying and protecting the dépôts there formed during a war with a great naval power would naturally be such—considering the distance from the base in the mother-country—as to diminish its value very much. We, on the other hand, have at least a station at each end of the route; of which the farther from home has not only great resources of its own, but is open to the reception of supplies in rear by trans-continental routes. The other practically closes the way through the Straits of Magellan, and also that round the Horn, and is but one in a chain of posts extending backwards to the parent state. In all other seas to which British commerce penetrates such a chain exists; and, as in this particular we have no rivals, our merchant vessels would enjoy the advantage of moving on lines thickly studded with places of refuge, from which hostile cruisers would naturally be compelled to keep aloof, and which supply *points d'appui* for protecting squadrons. The desideratum in ocean steam cruising is ready means of procuring fuel. It is not easy to conceive how, in the face of neutral obligations and our own maritime superiority, any other naval power could achieve this. Coaling ports it certainly would not be permitted to acquire or maintain. Supplies

from home would, almost of necessity, have to be sent in sailing vessels, or they would be used up on the way; and, if we allow that so difficult an operation as coaling at sea is possible, the transports would still be at the mercy of our more easily supplied cruisers. Supposing even the procuring of fuel be satisfactorily arranged for, our ocean trade is still in no bad position. Year by year the steam tonnage is gaining upon the sailing, and promises some day to supersede it altogether. Our great carrying business eastward through the Suez Canal is chiefly in the hands of steamship owners. On every line on which these ply are British ports at which they can obtain coal; it is not so with an enemy. Even were it so, capturing a steamer is a different matter from capturing a sailing vessel with a fast steam corvette, for every one pursued many others must be run away from. What the *Alabama* effected against fleets of sailing vessels has no analogy whatever with what such a vessel, even if well supplied, could be expected to do against fleets of the finest and best built steamers in the world. The *Alabama* drove the American flag from the ocean, even from West Indian waters; but at the very close of the Secession war, in one neutral port only, vessels which had successfully run, time after time, the most stringent blockade ever known, were still lying in scores uncaptured. The *Alabama's* quarry navigated under sail; the blockade-runners under steam. Thus the physical conditions of this branch of industry combine with international arrangements to favour the impunity of our commercial marine in war. The ingenuity and skill of designers and artisans have been on its side as well as the framers of treaties. The new rules have not added one jot to our power to injure an enemy; they have had no bearing upon the proper military objects of any war; and they have aided the industrial progress of the country to provide for that carrying trade, which is now more than ever a necessity to us, a system of defence of which few have yet realised the full value.

CYPRIAN A. G. BRIDGE,
Captain R.N.

RULES OF GENERAL AVERAGE.

REPORT ON THE MEETING HELD 30TH MAY, 1878.


THE once hoped for agreement between shipowners and Lloyd's Corporation as to the adoption of the York and Antwerp Rules, regulating the principles of adjustment of general average losses, does not appear to have made progress; each side still holds to the ground originally taken up; the steam shipowners and shipowners, supported by a large body of underwriters, both in Great Britain and abroad, contending that the York and Antwerp Rules represent a fair compromise between the Continental system and that in force in England, the former being described as the "common benefit system," whilst the latter is known as the "common safety system." Lloyd's Corporation have not only refused to make any concession, but, it is understood, openly declare that the only way of meeting the difficulty is to restrict the rules of general average, until finally they have improved general average out of existence altogether. To effect this much-to-be-desired consummation of extinguishing the rules, the Fabian policy of delay has evidently been adopted. In fact, since September last year, this plan has been steadily pursued. The powerful shipping interests of England, however, are not likely to be satisfied by a plea of delay. The General Shipowners' Association, early in May, convened a meeting at their rooms at St. Michael's Alley, Cornhill, for the purpose of deciding on the best course to be pursued, Mr. Cayte, chairman of the Average Adjusters Association, presiding. At this meeting it was resolved to issue invitations to the principal underwriting bodies, shipowners' associations, Chambers of Commerce, and others, asking them to send delegates to a meeting to be held at Cannon Street Hotel, on Thursday, the 30th May, called for the purpose of considering the York and Antwerp Rules. The Association for the Reform and Codification of the Law of Nations being requested to nominate two delegates, Sir Travers Twiss, D.C.L., Q.C., and Mr. E. E. Wendt, were, in compliance with this request, nominated by the Association.

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The Honorary General Secretary, Mr. H. D. Jencken, and the Honorary Secretary of the Antwerp Committee, Mr. J. Rand Bailey, being likewise invited to attend. The interests represented on this occasion were such as would attract the attention of any mercantile man. Thus, the General Shipowners' Association of London was represented by Messrs. H. J. Atkinson and J. Glover; the Chamber of Shipping of the United Kingdom, by Messrs. H. J. Atkinson and J. Park; the Liverpool Shipowners delegated their Chairman, Mr. J. Williamson; the Liverpool Steam Shipowners' Association being represented by Messrs. T. Moss and L. R. Bailey; the Glasgow Steam Shipowners by Messrs. T. Skinner and J. P. Kidston. Then followed—the Hull Chamber of Commerce and Shipping (Messrs. W. Brown and W. Bailey), the Hull Shipowners' Association (Messrs. W. Tulley and G. Jinman), North of England Steam Shipowners' Association (Messrs. G. Buckley and G. A. Laws), Sunderland Steam Shipowners' Association (Messrs. E. T. Gourley, M.P., and R. Hudson, Chairman), Hartlepool Steam Shipowners' Association (Messrs. R. Irvine and W. Young), Cardiff Steam Shipowners' Association (Col. Hill, Chairman, and Mr. E. W. Capper, Deputy-Chairman), Bristol Steam Shipowners' Association (Mr. M. Whitwill, Chairman), Greenock Steam Shipowners' Association (Mr. Jas. Stewart), Swansea Steam Shipowners' Association (Mr. John Prout), Belfast Chamber of Commerce (Mr. John Corry), Bristol Chamber of Commerce (Messrs. J. Waite, M.P., and T. Evans), Cardiff Chamber of Commerce (Messrs. Jas. Watson and C. E. Stallybrass), Dundee Chamber of Commerce (Messrs. John Logie and Joseph Gibson), Hull Chamber of Commerce (Messrs. F. B. Grotman and E. P. Macted), Southampton Chamber of Commerce (Messrs. H. Dunlop and G. T. Harper), W. Hartlepool Chamber of Commerce (Messrs. Robt. Norris and Thos. Benkinsop), Liverpool Chamber of Commerce (Mr. R. Lowndes), London General Average Association (Messrs. G. Cayte and M. Hopkins), Liverpool Salvage Association (Messrs. J. G. Allen and J. T. Dawson), Liverpool Underwriters' Association (Messrs. R. N. Dale, Chairman, and W. Hope, Deputy-Chairman), Glasgow Underwriters' Association (Messrs. John Rose and Alex. Campbell, M.P.)

A body of men thus composed may be fairly described as representing powerful, nay, paramount, interests in our islands. In deference to the International Law Association, the Chairman of the Antwerp Committee, Sir Travers Twiss, was elected to take the chair.

Mr. Henry John Atkinson having read over the list of invited delegates, the proceedings were commenced by Mr. Lowndes moving the following resolution :—"That, in the opinion of this meeting, it is desirable that the York and Antwerp Rules of General Average be carried into operation."

In support of this resolution, Mr. Lowndes gave a summary of the law, pointing out the necessity of establishing a uniform system, which the international character of the trade of modern days rendered necessary. From the days of the Rules of Oleron, shipowners and merchants had agreed to the principle of an equitable distribution of losses, occasioned by voluntary sacrifices during navigation for the preservation of ship and cargo. Grafted on this principle were customs which had assumed the force of law, each country adopting a different mode of settlement of losses thus incurred. Many of these rules were ill devised, others conflicting with those of neighbouring states ; in the result, great uncertainty arose how losses were to be adjusted ; this uncertainty being intensified by the course modern trade had assumed. A homeward-bound ship calling for orders, may discharge at a port of Great Britain, or at a continental port, according as the markets suited ; but each change of destination involved a change of law, as regards general average losses, should such happen. The expediency of a common rule, Mr. Lowndes pointed out, was thus manifest.

The meeting, with but little discussion, unanimously voted in favour of this resolution. A vote thus recorded, supported by the shipowners and steam shipowners of England, must bear important fruits. As a direct answer to the view taken by Lloyd's Corporation, of abolishing general average altogether, indeed, the vote on this occasion is not only a protest, but a warning, that the present struggle may, at no distant date, be intensified into open conflict between two powerful sections of our commercial community :

the ship and steam shipowners and Lloyd's underwriters. In anticipation of this conflict, Mr. Atkinson proposed the following resolution: "That, in the opinion of this meeting, the most effectual mode of procedure will be, by a general agreement on the part of shipowners, merchants, and underwriters, to insert in bills of lading and charter-parties the words, 'General average, if any, payable according to the York and Antwerp rules;' and in policies of insurance to add to the foreign general average clause the words, 'or York and Antwerp rules;' so that the clause will read thus: 'General average payable as per foreign adjustment (or custom), or York and Antwerp rules, if so made up.'" This important resolution having been seconded by Mr. Allen, it was likewise unanimously carried. To give further effect to these resolutions, Mr. E. E. Wendt proposed: "That a definite date should be fixed for the proposed change, and that the date suggested by this meeting be the 1st January, 1879." This resolution was likewise carried; and the meeting, after nominating a Committee * to give effect to what had been agreed, separated.

The importance of what took place on the 30th May last is exceptional. For the first time in our history have the vast interests represented by our mercantile shipping taken the lead, and have organised themselves into a representative body, determining, should the Government refuse to lend its aid, to carry by private contract that which is deemed vital to the shipowner. Whilst this movement has been going on in England the shipowners of Germany have not been idle, and measures have been taken to make representations to the Government of that country. In Belgium, the Netherlands, the Kingdoms of Sweden, Norway, and Denmark a similar course has been pursued; the United States likewise evincing a lively interest in what is transpiring. In France and Italy the opinion of those who have been consulted favours the adoption of the York and Antwerp

* The Central Committee is thus constituted:—Mr. J. Glover, chairman; Mr. N. Lowndes, hon. secretary; Messrs. Park, Corry, Capper, Buckley, Wendt, Atkinson, Williamson, Dale, and Bailey, members; with power to add to their number.

Rules, and an intimation, it is understood, has been given, that if the English Government will lead, the French Government will follow, and countenance the creation of common rules for adjusting general average losses.

The universal admission of the urgency of the requirement of a common law in this respect points to a deep-seated cause ; this cause of dissatisfaction may be traced to the heavy losses inflicted on shipowners and merchants, losses it is all but impossible to cover by policies of insurance ; added to which the endless delays occasioned in settling adjustments—delays which press with equal severity both on the insurer and the underwriter—harass the merchant and shipowner, to whom above all time is a vital element. It may not be therefore transcending legitimate limits, if a hope be expressed, that the conflict now threatened between Lloyd's Corporation and those who employ the insuring powers of Lloyd's may be averted and a common agreement arrived at.

H. D. JENCKEN, Barrister-at-Law,

Honorary General Secretary of the Association for the Reform
and Codification of the Law of Nations.

STEEL SHIPS.

SINCE our article on this subject in the number for January last, the question has been attracting much attention, and considerable progress has been made in the use of the new material for shipbuilding. In our April number we published a report by Mr. Wimshurst, the Principal Surveyor for iron ships to the Board of Trade, containing a brief *resumé* of what is known as to the composition and properties of the new metal, which Mr. Wimshurst carefully refrains from calling *steel*. We have reluctantly felt compelled to place the heading "Steel Ships" before this and our last paper on the subject, but would desire to repeat our former observation that the new metal is not *steel* at all, but merely *ingot iron*. Our readers will pardon this reiteration when they are told that some great

authorities on the subject have been so far led away by the name as to adduce experience of the wear of some decided steel ships which have been afloat for years, as proof of the reliableness of the new metal of an essentially different character, although bearing the same name. So far as its composition goes the new metal is rather an exceptionally pure iron than a steel, and for aught we know at present, may ultimately develop qualities the reverse of those of ordinary steel. The cautions recommended in using it, and the careful testing of each plate, are rendered necessary by the fact that in the present state of the new processes of manufacture we cannot without tests be absolutely certain that the metal obtained is the real *bona fide* ingot iron or mild steel. Mr. Wimshurst suggests that in consequence of the great ductility of the new metal, the ordinary system of riveting may be found insufficient, but wisely does not lay down any rules to be followed, and concludes with the excellent practical suggestion that in all cases of passenger ships built of mild steel "frequent easily made surveys should be held during the first year," which surveys "need not be of such a character as to interfere in the least with the engagements of the vessel, but they will afford the Board a prompt and effective means of checking any evil which may be found to arise."

We have, in our present paper, to notice a lengthy and important communication made to the Institution of Naval Architects, by the Chief Surveyor to Lloyd's Registry, on the subject, and giving in great detail the result of a series of experiments instituted by the Committee of Lloyd's Register. Mr. Martell begins his paper by some remarks upon the prospects of the general adoption of the new material, and appears to regard the question as practically settled. He says, "The time has now come when it is said by many others, besides the manufacturers, that steel can be used with as much confidence as iron, and it is held that whilst the properties of mild steel are in every respect superior to iron, the cost, having regard to the reduced weight required, will warrant the shipowner, from a commercial point of view, in adopting the lighter and stronger material." We have also the important fact that during the last twelve months the Committee of Lloyd's have

had before them proposals for 5,000 tons of sailing ships, and 18,000 tons of steamers, to be built of mild steel.

We are glad to hear that, so far as they have gone, Lloyd's fully agree with the Admiralty as to the practical value of mild steel. As regards its working qualities Mr. Martell produced a specimen "shingled" from cuttings of plates which were in use, and which had stood a tensile strain of 26 tons per square inch. Experiment proved that its behaviour in the fire and under the hammer was just that of ordinary iron: in fact, the welds were cleaner and more perfect. The first series of experiments were made upon the strength of riveted joints, the results being, briefly, that iron plates double-chain riveted with iron rivets, the holes being punched, developed a mean tensile strength of 17·9 tons per square inch. Steel plates connected with iron rivets gave out by shearing of the rivets at a strain 16·7 tons per square inch of rivet area, the strain upon the plate only reaching 15·8 per square inch. Steel plates connected with steel rivets developed a mean strength of 22·5 tons per square inch. The result of these experiments, if borne out by similar results with more extended experience, will be to prove, that in using iron rivets with steel plates we must have a larger proportion of rivet area to the plate area between the holes for double riveting, or the plates must be treble riveted, unless it be found that steel rivets can be used with good results, in which case the ordinary scale of riveting will be sufficient. As regards the practical use of steel rivets, in addition to the practical experience at Glasgow to which we adverted in our former article, Mr. Martell states that they have been recently satisfactorily used in two steel vessels, built by Messrs. Laird, of Birkenhead. Special care must however be taken to make sure that the rivets are really *mild* steel, and even then it is desirable that they be uniformly heated, and not at too high a temperature. As an illustration of this, a case is adduced where some builders tried steel rivets, and found that after some landing edges of outside plating had been riveted, many rivets were broken mostly between the plates; and in this case iron rivets were ultimately used throughout the vessel. Subsequent experience has shown that mild steel rivets can be safely used by ordinary riveters, and what

is more, with the ordinary rivet boys; and we must conclude, therefore, that the rivets which failed were not made of true mild steel.

A second series of experiments were undertaken with a view to ascertaining the relative effect of punching upon mild steel and upon iron plates. The results are thus summarised:—

“1.—That steel plates very thin suffer less from punching than iron.

“2.—That the difference in loss of strength by punching on steel and iron does not appear sufficiently great to require special precautions to be taken for steel more than for iron in plates up to $\frac{1}{8}$ inch in thickness.

“3. That in plates above eight-sixteenths in thickness, the loss of strength of iron plates by punching ranged from 20 to 23 per cent., while in steel plates of the same thickness it ranged from 22 to 33 per cent. of the original strength of the plate between the rivet holes. An occasional plate, both of iron and steel, showed a smaller loss than the minimum stated, but they were exceptional cases.

“4. That by annealing after punching, the whole of the lost strength was restored, and in some instances greater relative strength was obtained than existed in the original plates.

“5. That the steel was injured only a small distance around the punched holes, and that by riming with a larger drill than the punch, from $\frac{1}{8}$ inch to $\frac{1}{4}$ inch around the holes, the injured part was removed, and no loss of strength was then observable, any more than if the hole had been drilled.

“6. That in drilled plates, no appreciable loss of tensile strength was observed.”

Mr. Martell then, at some length, considers the respective disadvantages of riming the holes or annealing the plates. He also shows that, even after allowing the 20 per cent. less scantlings for steel, and supposing a further loss of 30 per cent. by punching the plates, as compared with the 20 per cent. loss due to punching in ordinary iron, the advantage is still with the steel. A better solution of the difficulty than annealing will probably be found in the use of some kind of punch which will distress the iron less

than the common one does. Some of the experiments proved that the loss due to punching, when the patent spiral punch was used, was $2\frac{1}{2}$ tons per square inch less than with the common punch.

The second part of Mr. Martell's paper is devoted to the question of the relative cost of vessels built of mild steel and of iron, taking into the question the reduced weight of hull and consequent larger carrying capacity of the former. In the first place, he disposes of the objection that mild steel is of so much greater specific gravity than iron as to detract considerably from the advantage of the smaller scantlings offered by Lloyd's. It has been said that the difference was as much as 4 per cent., data furnished by Messrs. John Brown and Co., the well known Sheffield firm, fix it at 2.66 per cent., and Mr. Bessemer states it to be still less. Mr. Martell goes into details as to the first cost, and subsequent yearly profit of a steamer 2,300 tons gross, supposed to be built for the Indian trade, and makes out that with a cargo of coals out and measurement goods home, the additional freight of the steel ship would just pay the percentage on her additional cost, but with a deadweight cargo out and home there would be a profit on the voyage of $6\frac{1}{2}$ per cent. in the steel ship as against $5\frac{1}{2}$ on the iron ship. With sailing ships the gain is not so clear, although, from the fact that a sailing vessel of 1,700 tons is now being built of the new material, it would appear that at least one large ship-owner believes that even in the case of sailing vessels the additional freight would pay interest on the additional cost. Obviously a saving of weight in the structure is of very much more importance in a steamer than in a sailing ship; in the former, the machinery and coals absorb so much of the carrying capacity that the addition of a few tons to the freight gives a larger percentage on the total freight.

As regards the durability of the new material, Mr. Martell can tell us little more than has been known for some time past. We agree with him that the fact that the Admiralty are going to build some small torpedo vessels of brass or bronze instead of steel is nothing to the point. It has been found that some of the thin steel torpedo vessels have in a very short time become very much pitted; it must be remembered, however, that they are only $\frac{1}{4}$ in.

thick, and an amount of deterioration hardly noticeable in another vessel would be serious in them. Less to the point are the other remarks as to the durability of some vessels built of steel some years ago, and which have worn well. It cannot be too much insisted upon that these vessels were built of *bona fide* steel, whereas the new metal, mild steel, in some of its properties, is much more analogous to wrought iron than to steel. Especially is such the case in the most important feature, as regards decay. The chemical analysis of mild steel shows a larger percentage of pure metallic iron than is found in any commercial wrought iron.

Probably with the increased demand for mild ship steel the cost of production may, in a few years, be so diminished that it may successfully compete with wrought iron for all kinds of ships. At present it will probably be used in many steamers, more especially in vessels designed for speed, in which, as compared with ordinary steamers, every ton of increased freight is of as much greater importance, as in the comparison between ordinary steamers and sailing ships.

TRANSATLANTIC LINES AND STEAMSHIPS.

THE following Tables have been compiled to show, in a convenient and comprehensive manner, the details of the gradual development, during the past 97 years, of our great Transatlantic steam trade.

Table No. 1 gives the number and names of the various lines, also the number and collective tonnages of the steamships employed by them in 1877. By it may be seen that there were 182 steamers, with an aggregate tonnage of 556,850 tons. Of these, 125 belonged to Great Britain, and had a tonnage of 377,905 tons, or more than three-fifths of the entire tonnage.

Table No. 2 gives dimensions of the most famous steamers. By this will be seen the immense size of the *Great Eastern* in comparison with the other vessels, and also the gradual increase in size from the *Britannia's* 230 feet, in 1840, down to the *City of Berlin's* 520 feet, in 1875.

Table No. 8 gives the various most rapid passages made outward and homeward. This table shows that the passages now have been reduced in duration of time to one-half of that occupied at the commencement, notwithstanding that the distances run are greater by some 800 miles.

Table No. 4 shows the average duration of the passages made throughout the year by the various Liverpool lines. The gradual reduction of the time occupied is also clearly shown by this table, as is also the superiority of the new style of steamship over the old, owing to the great difference in favour of the White Star Line, whose vessels are of the latest and most improved type.

The next, Table No. 5, contains in a brief form, the particulars of the various steamships lost in the trade. Since 1840, 56 steamers have been lost, of which 29 were the cause of loss of life. Of the steamships lost, 9 have never been heard of after sailing from port, so that it is unknown how they were lost; 4 were burned; 5 sunk by collisions; 2 sunk by colliding with ice; 2 foundered at sea; and 34 were wrecked. Of all the foregoing steamships lost, only two of them can be attributed to a breakdown of the machinery, namely, the Anchor Line steamer, *Hibernia*, which foundered through her propeller shaft having been withdrawn from its place after the propeller had been lost. The other, the Anchor liner, *Ismailia*, which was once spoken under sail, her machinery being disabled, was never heard of afterwards.

With these two exceptions, not a single passenger's life has been sacrificed through a breakdown of the machinery; nor, as far as the author can learn, has a boiler explosion occurred on the hundreds of steamers employed since 1840. Too much importance cannot be attached to this matter, as the past 37 years' experience proves that there exists no grounds for uneasiness as to the safety of the vessel when her crank or propeller shaft breaks, or propeller is lost. Indeed, it is the author's opinion, after having sailed over 800 miles in a large disabled steamer, that most of the existing screw steamers are possessed of sailing qualities second only to first-class clippers, a fact that should become extensively known, so that the many alarms caused on a steamer being re-

ported disabled may be set at rest. During the year 1877, there were over 500 sailings of steamers from Liverpool alone, and only 5 became disabled.

The largest number of losses, however, must be attributed to a cause which unfortunately lies beyond the power of science to prevent—that is, the fallibility of man, who, by miscalculating distances, mistaking lights, errors of judgment, &c., brings about the greatest marine disasters; for it is unreasonable to expect that profitable vessels will ever be built which can, without sustaining injury, be driven upon rocks at full speed, or withstand the shock of another vessel (with a displacement, perhaps, of eight or ten thousand tons) striking them.

Another important consideration connected with steamships is the consumption of fuel. The great reduction which has recently taken place in this heavy item of expenditure must be largely attributed to the introduction of the compound engine. As an instance of the great reduction which has taken place, the author has made out the following calculations, based on the various averages recorded :—

Name of Ship.	Date.	Duration of Passage.	Average daily Consumption.	Total Consump. on Voyage.	Assumed Cargo delivered in Tons.	Consump. per Ton of Cargo delivered.	Average Speed per hour in Knots.	Consump. per Knot.	Indicated Horse Power.	Consump. per I.H.P.	Displacement in Tons.
<i>Britannia</i> ..	July, 1840	D. H. M. 14 8 0	Tons. 38	Tons. 544	225	48.35	8.3	8.8	740	4.7	2,050
<i>Scotia</i>	July, 1866	8 4 34	160	1,305	1,400	18.5	14.5	9.2	4,200	3.6	6,800
<i>City of Paris</i>	Nov., 1867	8 4 1	100	816.6	1,700	9.6	13.8	6	2,800	3.3	4,500
<i>Britannia</i> ..	Aug., 1877	7 10 53	100	745.6	3,350	4.45	15.6	5.3	4,920	1.9	8,500

From these particulars it will be seen how great has been the saving of fuel, notwithstanding an immense increase of tonnage, horse-power, and speed.

Although much of this must be attributed to the compound engine, still it is the opinion of the author that the improved proportions and lines of the hulls have also served in a great measure to bring about so satisfactory a result.

Up to the present date the honour of having made the fastest passages (an honour esteemed in the highest degree by the several lines) belongs to the White Star Line, as may be seen by Table 3, their steamships *Britannic*, *Germanic*, having on several occasions made passages under seven and a half days. The splendid performance of these two vessels deserve more than a passing notice. Up to about two years ago, a passage of 7 days 20 hours was considered to be a most wonderfully rapid one, but now we find the average passages throughout the year 1876 of the *Britannic* were, outwards 7 days 18 hours 22 min., and homewards 7 days 20 hours 53 min., and the fastest passages 7 days 10 hours 58 min., and 7-12-41 respectively. Some of the day's runs made by these steamers are also worthy of note.

In April last (1877) the *Germanic* going westward logged 410 knots in a day of 24 hours 35 minutes, which is at the rate of $19\frac{1}{4}$ statute miles per hour, and the same vessel coming eastward in October last logged 894 knots in a day of 23 hours 26 minutes, which is at the rate of $19\frac{3}{4}$ statute miles per hour, and as over 400 knots has been several times run by these steamers and the Inman line *City of Berlin* in a day, we may be quite prepared to hear of the passage from Queenstown to New York being made in seven days. The foregoing performances will scarcely be surpassed until the existing mode of propelling vessels has undergone a complete change, which will materially reduce the costly wear and tear of machinery and the yet heavy consumption of fuel. The average rapid passages given above show pleasing records when compared with those of the clipper ships in the year 1839; these were $38\frac{1}{2}$ days outward, and $22\frac{1}{2}$ homeward, the fastest being 23 days out and 17 home; and of the steamships, which averaged $16\frac{1}{2}$ days out and $13\frac{1}{2}$ home, the fastest being 13 days and $12\frac{1}{2}$ respectively.

It may be a matter of surprise that no mention has been made of the performances of the newest ships of other lines than those noticed, but it was found that space only permitted the most remarkable to be inserted in this paper.

ARTHUR J. MAGINNIS,

Liverpool.

TABLE No. 1.

NAMES OF ATLANTIC LINES WITH NUMBER AND TONNAGE OF SHIPS IN 1877.

Name of Line.	Number of Steamers.	Total gross Registered Tonnage.	Total Tonnage of each Nation.
1. Cunard	18	49,710	
2. Inman	11	39,973	
3. White Star	9	24,213	
4. Guion	5	17,740	
5. National	12	50,382	
6. Dominion	9	21,673	
7. Allan	18	52,650	
8. Anchor	14	34,799	
9. State	7	16,633	
10. Leyland	6	17,946	
11. Wilson	5	14,698	
12. Warren	5	15,741	
13. Beaver	3	6,635	
14. Great Western	3	5,112	
15. American	5	15,793	377,905 British, 125 Steamers.
16. French	10	39,325	15,798 American, 5 "
17. Hamburg, Amer.	16	51,034	39,325 French, 10 "
18. North German Lloyds	16	46,361	97,395 German, 32 "
19. Netherlands S. N. Co.	6	17,959	
20. Nether. Amer. S. N. Co.	4	8,468	26,427 Dutch, 10 "
		Total Tonnage	556,850 Total 182 Steamers.

TABLE No. 2.

DIMENSIONS, &c., OF FAMOUS ATLANTIC STEAMERS.

Name of Ship.	Owners.	Where Built.	Year.	Dimensions.			Ton- nage.	Horse- Power.	How Propel- led.	
				Length	Bdth.	Depth				
				Ft.	In.	Ft.	In.			
<i>Britannia</i> ..	Cunard Line ..	Greenock	1840	280	0	84	5	1,150	440	Paddles
<i>Great Britain</i> ..	Gt. Western Line ..	Bristol	1848	374	2	48	2	8,370	500	Screw
<i>Asia</i> ..	Cunard Line ..	Greenock	1850	308	2	45	2	2,237	750	Paddles
<i>Arctic</i> ..	Collins " ..	New York	1850	390	2	45	2	2,800	1,000	"
<i>Persia</i> ..	Cunard ..	Glasgow	1855	360	2	45	2	3,300	900	"
<i>Great Eastern</i> ..	Gt. Eastern S.S. Co.	Millwall	1858	679	6	82	8	18,915	1,000	"
<i>Scotia</i> ..	Cunard Line ..	Glasgow	1862	379	6	47	8	3,871	1,000	Paddles
<i>City of Paris</i> ..	Inman " ..	"	1866	346	6	40	4	2,651	550	Screw
<i>City of Brussels</i> ..	Inman " ..	"	1869	390	6	40	8	3,081	600	"
<i>Oceanic</i> ..	White Star Line ..	Belfast	1871	420	6	40	9	3,707	600	"
<i>Britannic</i> ..	White Star ..	"	1874	467	6	45	2	5,004	760	"
<i>City of Berlin</i> ..	Inman Line ..	Greenock	1875	520	6	44	2	5,481	1,000	"

TABLE No. 3.

RAPID PASSAGES MADE BY ATLANTIC STEAMERS FROM 1840 TO 1877.

OUTWARD.

Year.	Month.	Name of Steamer.	Owners.	From.	To.	Distances run in Knots.	Time occupied.		
							Days.	Hours.	Min.
1840	July	<i>Britannia</i> ..	Cunard Line ..	Liverpool ..	Boston ..	2,755	14	8	0
"	Aug.	<i>Acadia</i> ..	" ..	" ..	Halifax ..	2,487	11	4	0
1845	July	<i>Great Britain</i> ..	Great Western Line ..	Bristol ..	New York ..	2,988	18	21	0
1846	"	<i>Europa</i> ..	Cunard Line ..	Liverpool ..	" ..	3,017	11	3	0
1858	"	<i>Baltic</i> ..	Collins " ..	Queenstown	" ..	2,721	9	16	33
1864	"	<i>Scotia</i> ..	Cunard " ..	" ..	" ..	2,783	8	15	45
1866	July	<i>Scotia</i> ..	" ..	" ..	" ..	2,851	8	4	34
1867	Nov.	<i>City of Paris</i> ..	Inman " ..	" ..	" ..	2,700	8	4	1
1869	Aug.	<i>City of Paris</i> ..	" ..	" ..	Halifax ..	2,258	6	19	5
1873	May	<i>Adriatic</i> ..	White Star Line ..	" ..	New York ..	2,778	7	23	17
1875	Sept	<i>City of Berlin</i> ..	Inman Line ..	" ..	" ..	2,839	7	18	2
1876	June	<i>Britannic</i> ..	White Star Line ..	" ..	" ..	2,854	7	16	36
"	Nov.	<i>Britannic</i> ..	" ..	" ..	" ..	2,795	7	13	11
1877	April	<i>Germanic</i> ..	" ..	" ..	" ..	2,890	7	11	37
"	Aug.	<i>Britannic</i> ..	" ..	" ..	" ..	2,802	7	10	53

HOMEWARD.

1840	July	<i>Britannia</i> ..	Cunard Line ..	Halifax ..	Liverpool ..	2,573	10	0	0
1841	"	<i>Acadia</i> ..	" ..	" ..	" ..	2,584	9	21	0
1846	May	<i>Great Britain</i> ..	Gt. Western Line ..	New York ..	" ..	3,209	10	23	0
1852	Feb.	<i>Atlantic</i> ..	Collins Line ..	" ..	Queenstown	2,712	9	17	15
1856	"	<i>Persia</i> ..	Cunard " ..	" ..	" ..	2,732	9	1	45
1858	"	<i>Pacific</i> ..	Collins " ..	St. John's ..	Galway ..	1,720	6	1	0
1868	Dec.	<i>Scotia</i> ..	Cunard " ..	New York ..	Queenstown	2,731	8	3	0
1869	"	<i>City of Brussels</i> ..	Inman " ..	" ..	" ..	2,687	7	22	3
1872	Oct.	<i>Polynesian</i> ..	Allan " ..	Quebec ..	Moville ..	2,379	7	18	55
1873	Jan.	<i>Baltic</i> ..	White Star Line ..	New York ..	Queenstown	2,843	7	20	9
1875	Oct.	<i>City of Berlin</i> ..	Inman Line ..	" ..	" ..	2,820	7	15	22
1876	Feb.	<i>Germanic</i> ..	White Star Line ..	" ..	" ..	2,894	7	15	17
"	Dec.	<i>Britannic</i> ..	" ..	" ..	" ..	2,882	7	12	41

TABLE No. 4.

AVERAGE PASSAGES OF STEAMSHIPS OF ATLANTIC LINES FROM 1850 TO 1877.

OUTWARD.

Year.	Cunard Line.			Collins Line.			Inman Line.			Guion Line.			National Line.			White Star Line.		
	Days.	Hours.	Min.	Days.	Hours.	Min.	Days.	Hours.	Min.	Days.	Hours.	Min.	Days.	Hours.	Min.	Days.	Hours.	Min.
1850.	13	0	0															
1852.	12	19	26															
1855.	12	12	0	11	22	40												
1866.	10	11	34				11	15	18				10	11	40			
1873.	10	16	40				10	22	4	12	6	38	11	21	36	9	19	48
1875.	10	17	24				10	20	45	11	8	47	12	1	19	9	16	33
1876.	10	13	32				10	1	44	10	23	45	11	16	45	8	21	14
1877.*	10	0	58				8	21	17	9	16	30	10	23	12	8	13	39
HOMEWARD.																		
1850.	12	16	0															
1855.	11	12	0	10	20	0												
1866.	9	4	39				10	11	40									
1873.	9	7	59				10	0	2	10	20	18	10	14	16	8	22	39
1876.	9	4	48				8	17	52	9	20	4	10	7	35	8	12	13
1877.*	9	7	7				8	20	36	9	13	51	10	5	31	8	10	30

* First nine months.

TABLE No. 5.

LIST OF STEAMSHIPS AND NUMBER OF LIVES LOST IN ATLANTIC TRADE FROM 1840 TO 1877.


Year.	Month.	No.	Name of Vessel.	Owners.	Nation-ality.	No. of Lvs. Lst.	How Lost.	Where.
1841	Mar. 11	1	<i>President</i> ..	Brit. & Am. St. N. Co.	British	136	Never	heard of.
1844	July 1	2	<i>Columbia</i> ..	Cunard Line	"	0	Wrecked in fog	Nova Scotia.
1850	Nov. —	3	<i>Helen Sloman</i> ..	"	"	9	"	"
1852	Dec. 24	4	<i>St. George</i> ..	"	"	51	Burned	"
1853	Dec. 5	5	<i>Humboldt</i> ..	N. Y. & Hav. S. N. Co.	Amren.	1	Wrecked	Halifax.
1854	Mar. 1	6	<i>City of Glasgow</i> ..	Inman Line	British	480	Never	heard of.
"	July 17	7	<i>Franklin</i> ..	N. Y. & Hav. S. N. Co.	Amren.	0	Wrecked	Long Island.
"	Sept. 27	8	<i>Arctic</i> ..	Collins Line	"	322	Sunk by collsn.	At sea.
1856	June 29	9	<i>St. Denis</i> ..	"	French	46	"	"
"	Sept. 23	10	<i>Pacific</i> ..	Collins Line	Amren.	240	Never	heard of.
"	Nov. 2	11	<i>Le Lyonnais</i> ..	"	French	130	Collision ..	Nantucket.
1857	Feb. 26	12	<i>Tempest</i> ..	Anchor Line	British	150	Never	heard of.
"	June 1	13	<i>Canadian</i> ..	Allan	"	0	Wrecked	"
1858	June 13	14	<i>New York</i> ..	Glsqw. & N. Y. S. Co.	"	0	Wrecked	Mull of Kintyre.
"	Sept. 13	15	<i>Austria</i> ..	"	German	470	Burned	At sea.
1859	June 28	16	<i>Argo</i> ..	Galway Line	British	0	Wrecked	Newfoundland.
"	Nov. 21	17	<i>Indian</i> ..	Allan	"	27	Wrecked	Nova Scotia.
1860	Feb. 20	18	<i>Hungarian</i> ..	"	"	237	Wrecked	Table Island.
"	Oct. 7	19	<i>Connaught</i> ..	Galway	"	0	Burned	Massachusetts.
1861	June 4	20	<i>Canadian</i> ..	Allan	"	35	Collided with an iceberg	Straits of Belleisle.
"	Nov. 5	21	<i>North Briton</i> ..	"	"	0	Wrecked	Paraquet Island.
1863	Apl. 27	22	<i>Anglo-Saxon</i> ..	"	"	237	Wrecked	Cape Race.
"	June 14	23	<i>Norwegian</i> ..	"	"	0	Wrecked	St. Paul's Island.
"	Aug. 4	24	<i>Georgia</i> ..	National	"	0	Wrecked	Table Island.
1864	Feb. 22	25	<i>Bohemian</i> ..	Allan	"	20	Wrecked	Cape Elizabeth.
"	Mar. 29	26	<i>City of N. York</i> ..	Inman	"	0	Wrecked	Dant's Rock.
"	Nov. 3	27	<i>Jura</i> ..	Chrt'd. by Allan Line	"	0	Wrecked	Queenstown.
"	Dec. 10	28	<i>Iowa</i> ..	"	"	0	Wrecked	Near Liverpool.
1865	July 31	29	<i>Glasgow</i> ..	"	"	0	Wrecked	Cherbourg.
1866	Dec. 1	30	<i>Scotland</i> ..	National Line	"	0	Burned	Nantucket.
1868	Jan. —	31	<i>Chicago</i> ..	Guion	"	0	Collision ..	At sea.
"	Apl. 17	32	<i>United Kingdom</i> ..	Anchor	"	80	Wrecked ..	Dant's Rock.
1869	Aug. 7	33	<i>Germania</i> ..	"	German	0	Never	Queenstown.
"	Aug. 8	34	<i>Cleopatra</i> ..	"	British	0	Wrecked ..	heard of.
"	Nov. 29	35	<i>Hibernia</i> ..	Anchor Line	"	0	Wrecked ..	Cape Race.
1870	Jan. 28	36	<i>City of Boston</i> ..	Inman	"	50	Lost in fog	Newfoundland.
"	Oct. 19	37	<i>Cambria</i> ..	Anchor	"	177	Foundered ..	At sea.
"	"	"	"	"	"	190	Never	heard of.
1872	Apl. 7	38	<i>Dacian</i> ..	"	"	0	Wrecked ..	North-West Coast of Ireland.
"	May 17	39	<i>Tripoli</i> ..	Cunard Line	"	0	Wrecked ..	Halifax.
"	Oct. 8	40	<i>Scanderia</i> ..	Angl-Egypt. S. N. Co.	"	38	Never	Tuskar Rock, Ireland.
"	Dec. 23	41	<i>Germany</i> ..	Allan Line	"	30	Wrecked ..	heard of.
1873	Jan. 27	42	<i>Britannia</i> ..	Anchor	"	0	Wrecked ..	Near Bordeaux.
"	Apl. 1	43	<i>Atlantic</i> ..	White Star Line ..	"	545	Wrecked ..	Arran Island.
"	July 7	44	<i>C. of Washngtn.</i> ..	Inman	"	0	Wrecked ..	Near Halifax.
"	Sept. 27	45	<i>Ismailia</i> ..	Anchor	"	52	Wrecked ..	Nova Scotia.
"	Oct. 1	46	<i>Missouri</i> ..	Dominion	"	0	Never	heard of.
"	Nov. 22	47	<i>Ville du Havre</i> ..	Transatlantique Line	French	236	Wrecked ..	Bahamas.
"	Dec. —	48	<i>Colorado</i> ..	Guion	British	6	Wrecked ..	At sea.
1874	Apl. 3	49	<i>Europe</i> ..	Transatlantique ..	French	0	Collision ..	River Mersey.
1875	May 7	50	<i>Schiller</i> ..	Eagle	German	312	Foundered ..	At sea.
"	June 2	51	<i>Vicksburg</i> ..	Dominion	British	47	Wrecked ..	Scilly Islands.
"	July 19	52	<i>Abbotsford</i> ..	American	Amren.	0	Collided with an iceberg	Off Newfoundland.
1876	Dec. 6	53	<i>Deutschland</i> ..	N. German Lloyds ..	German	52	Wrecked ..	Angiesca. [Sand.
1877	Jan. —	54	<i>Colombo</i> ..	Wilson	British	44	Wrecked ..	Kentish Knave.
"	Mar. —	55	<i>Rusland</i> ..	Red Star	Belgian	0	Never	heard of.
"	May —	56	<i>Dakota</i> ..	Guion	British	0	Wrecked ..	Long Island.
"	"	"	"	"	"	0	Wrecked ..	North Wales.

NOTE.—In cases of Steamships never heard of, the dates given are dates of sailing from ports.

Total number of lives lost through steamship disasters 4480
 Estimated number of lives lost through various causes 850

Total number of lives lost 4780 from 1840 to Dec. 1877.

WRONGFUL STOWAGE OF GRAIN.

N the 31st May and 1st June, Mr. Travis, the Stipendiary Magistrate at Hull, was called on to investigate and decide the first case that has arisen under the 22nd Section of the Merchant Shipping Act, 1876; that is to say, of Lord Norton's Act, commonly and quite erroneously called Plimsoll's Act.

The Section is as follows :—

“ 22. *Grain Cargoes*.—No cargo of which more than one-third consists of any kind of grain, corn, rice, paddy, pulse, seeds, nuts, or nut kernels, hereinafter referred to as ‘grain cargo,’ shall be carried on board any British ship, unless such grain cargo be contained in bags, sacks, or barrels, or secured from shifting by boards, bulkheads, or otherwise.

“ If the managing owner or master of any British ship, or any agent of such owner who is charged with the loading of the ship or the sending her to sea, knowingly allows any grain cargo or part of a grain cargo to be shipped therein for carriage contrary to the provisions of this section, he shall for every such offence incur a penalty not exceeding three hundred pounds, to be recovered upon summary conviction.”

The gist of the Section is that it prohibits the carriage of grain cargo in bulk, unless it is “secured from shifting by boards, bulkheads, or otherwise.”

The case brought before Mr. Travis was selected by the Board of Trade as a test case, and the penalty of £300 was not asked for. By the Board of Trade acting as they did, the whole question has been investigated thoroughly, and without any undue wrangling or heat. All parties must concur with us when we express approval of the admirable tact and judgment that marked the case throughout. No question was raised that could or did throw any slur on the reputation of the owners of the ship or on the skill and honesty of the captain, whilst Mr. Lancel V. de Hamel who appeared

TABLE No. 5.

LIST OF STEAMSHIPS AND NUMBER OF LIVES LOST IN ATLANTIC TRADE FROM 1840 TO 1877.


Year.	Month.	No.	Name of Vessel.	Owners.	Nation-ality.	No. of Lvs. Lst.	How Lost.	Where.
1841	Mar. 11	1	<i>President</i> ..	Brit. & Am. St. N. Co.	British	186	Never	heard of.
1844	July 1	2	<i>Columbia</i> ..	Cunard Line ..	"	0	Wrecked in fog	Nova Scotia.
1850	Nov. —	3	<i>Helen Sloman</i> ..	" ..	"	9	" ..	" ..
1852	Dec. 24	4	<i>St. George</i> ..	" ..	"	51	Burned ..	" ..
1853	Dec. 5	5	<i>Humboldt</i> ..	N. Y. & Hav. S. N. Co.	Amrcn.	1	Wrecked ..	Halifax.
1854	Mar. 1	6	<i>City of Glasgow</i> ..	Inman Line ..	British	480	Never	heard of.
"	July 17	7	<i>Franklin</i> ..	N. Y. & Hav. S. N. Co.	Amrcn.	0	Wrecked ..	Long Island.
"	Sept. 27	8	<i>Arctic</i> ..	Collins Line ..	"	322	Sunk by collsn.	At sea.
1856	June 29	9	<i>St. Denis</i> ..	" ..	French	46	" ..	" ..
"	Sept. 23	10	<i>Pacific</i> ..	Collins Line ..	Amrcn.	240	Never	heard of.
"	Nov. 2	11	<i>Le Lyonnais</i> ..	" ..	French	120	Collision ..	Nantucket.
1857	Feb. 26	12	<i>Tempest</i> ..	Anchor Line ..	British	150	Never	heard of.
"	June 1	13	<i>Canadian</i> ..	Allan ..	"	0	Wrecked ..	" ..
1858	June 13	14	<i>New York</i> ..	Glsgrw. & N. Y. S. Co.	"	0	Wrecked ..	Mull of Kintyre.
"	Sept. 13	15	<i>Austria</i> ..	" ..	German	470	Burned ..	At sea.
1859	June 28	16	<i>Argo</i> ..	Galway Line ..	British	0	Wrecked ..	Newfoundland.
"	Nov. 21	17	<i>Indian</i> ..	Allan ..	"	27	Wrecked ..	Nova Scotia.
1860	Feb. 20	18	<i>Hungarian</i> ..	" ..	"	237	Wrecked ..	Table Island.
"	Oct. 7	19	<i>Connaught</i> ..	Galway ..	"	0	Burned ..	Massachusetts.
1861	June 4	20	<i>Canadian</i> ..	Allan ..	"	35	Collided with an iceberg	Straits of Belleisle.
"	Nov. 5	21	<i>North Briton</i> ..	" ..	"	0	Wrecked ..	Paraquet Island.
1863	Apl. 27	22	<i>Anglo-Saxon</i> ..	" ..	"	237	Wrecked ..	Cape Race.
"	June 14	23	<i>Norwegian</i> ..	" ..	"	0	Wrecked ..	St. Paul's Island.
"	Aug. 4	24	<i>Georgia</i> ..	National ..	"	0	Wrecked ..	Table Island.
1864	Feb. 23	25	<i>Bohemian</i> ..	Allan ..	"	20	Wrecked ..	Cape Elizabeth.
"	Mar. 29	26	<i>City of N. York</i> ..	Inman ..	"	0	Wrecked ..	Daunt's Rock.
"	Nov. 3	27	<i>Jura</i> ..	Chrt'd. by Allan Line	"	0	Wrecked ..	Queenstown.
"	Dec. 10	28	<i>Iowa</i> ..	" ..	"	0	Wrecked ..	Near Liverpool.
1865	July 31	29	<i>Glasgow</i> ..	" ..	"	0	Wrecked ..	Cherbourg.
1866	Dec. 1	30	<i>Scotland</i> ..	National Line ..	"	0	Burned ..	Nantucket.
1868	Jan. —	31	<i>Chicago</i> ..	Guion ..	"	0	Collision ..	At sea.
"	Apl. 17	32	<i>United Kingdom</i> ..	Anchor ..	"	80	Wrecked ..	Daunt's Rock.
1869	Aug. 7	33	<i>Germania</i> ..	" ..	German	0	Never	Queenstown.
"	Aug. 8	34	<i>Cleopatra</i> ..	" ..	British	0	Wrecked ..	heard of.
"	Nov. 29	35	<i>Hibernia</i> ..	Anchor Line ..	"	0	Wrecked ..	Cape Race.
1870	Jan. 28	36	<i>City of Boston</i> ..	Inman ..	"	50	Lost in fog	Newfoundland.
"	Oct. 19	37	<i>Cambria</i> ..	Anchor ..	"	177	Foundered ..	At sea.
"	"	"	" ..	" ..	"	190	Never	heard of.
1872	Apl. 7	38	<i>Dacian</i> ..	" ..	"	0	Wrecked ..	North-West Coast of Ireland.
"	May 17	39	<i>Tripoli</i> ..	Cunard Line ..	"	0	Wrecked ..	Halifax.
"	"	"	" ..	" ..	"	0	Wrecked ..	Tuskar Rock, Ireland.
"	Oct. 8	40	<i>Scanderia</i> ..	Angl-Egypt. S. N. Co.	"	38	Never	heard of.
"	Dec. 23	41	<i>Germany</i> ..	Allan Line ..	"	30	Wrecked ..	Near Bordeaux.
1873	Jan. 27	42	<i>Britannia</i> ..	Anchor ..	"	0	Wrecked ..	Arran Island.
"	Apl. 1	43	<i>Atlantic</i> ..	White Star Line ..	"	545	Wrecked ..	Near Halifax.
"	July 7	44	<i>C. of Washngtn.</i> ..	Inman ..	"	0	Wrecked ..	Nova Scotia.
"	Sept. 27	45	<i>Ismaïlia</i> ..	Anchor ..	"	52	Never	heard of.
"	Oct. 1	46	<i>Missouri</i> ..	Dominion ..	"	0	Wrecked ..	Bahamas.
"	Nov. 22	47	<i>Ville du Havre</i> ..	Transatlantique Line	French	226	Collision ..	At sea.
"	Dec. —	48	<i>Colorado</i> ..	Guion ..	British	6	Collision ..	River Mersey.
1874	Apl. 3	49	<i>Europe</i> ..	Transatlantique ..	French	0	Foundered ..	At sea.
1875	May 7	50	<i>Schiller</i> ..	Eagle ..	German	312	Wrecked ..	Scilly Islands.
"	June 2	51	<i>Vicksburg</i> ..	Dominion ..	British	47	Collided with an iceberg	Off Newfoundland.
"	July 19	52	<i>Abbotsford</i> ..	American ..	Amrcn.	0	Wrecked ..	Anglesea Island.
1876	Dec. 6	53	<i>Deutschland</i> ..	N. German Lloyds ..	German	53	Wrecked ..	Kentish Knol.
1877	Jan. —	54	<i>Colombo</i> ..	Wilson ..	British	44	Never	heard of.
"	Mar. —	55	<i>Rusland</i> ..	Red Star ..	Belgian	0	Wrecked ..	Long Island.
"	May —	56	<i>Dakota</i> ..	Guion ..	British	0	Wrecked ..	North Wales.

NOTE.—In cases of Steamships never heard of, the dates given are dates of sailing from ports.

Total number of lives lost through steamship disasters	4430
Estimated number of lives lost through various causes	320

Total number of lives lost 4750 from 1840 to Dec. 1877

WRONGFUL STOWAGE OF GRAIN.

N the 31st May and 1st June, Mr. Travis, the Stipendiary Magistrate at Hull, was called on to investigate and decide the first case that has arisen under the 22nd Section of the Merchant Shipping Act, 1876; that is to say, of Lord Norton's Act, commonly and quite erroneously called Plimsoll's Act.

The Section is as follows :—

“ 22. *Grain Cargoes*.—No cargo of which more than one-third consists of any kind of grain, corn, rice, paddy, pulse, seeds, nuts, or nut kernels, hereinafter referred to as ‘grain cargo,’ shall be carried on board any British ship, unless such grain cargo be contained in bags, sacks, or barrels, or secured from shifting by boards, bulkheads, or otherwise.

“ If the managing owner or master of any British ship, or any agent of such owner who is charged with the loading of the ship or the sending her to sea, knowingly allows any grain cargo or part of a grain cargo to be shipped therein for carriage contrary to the provisions of this section, he shall for every such offence incur a penalty not exceeding three hundred pounds, to be recovered upon summary conviction.”

The gist of the Section is that it prohibits the carriage of grain cargo in bulk, unless it is “secured from shifting by boards, bulkheads, or otherwise.”

The case brought before Mr. Travis was selected by the Board of Trade as a test case, and the penalty of £800 was not asked for. By the Board of Trade acting as they did, the whole question has been investigated thoroughly, and without any undue wrangling or heat. All parties must concur with us when we express approval of the admirable tact and judgment that marked the case throughout. No question was raised that could or did throw any slur on the reputation of the owners of the ship or on the skill and honesty of the captain, whilst Mr. Lancel V. de Hamel who appeared

for the Board of Trade, and Dr. Rollit who appeared for the master, fully deserved the compliment paid to them by the learned magistrate at the end of the case which he had so thoroughly sifted and well decided.

The efforts of the Board of Trade were directed against a system and not against an individual, but all individuals who happen to be masters of ships will, if they neglect the warning given, do so at their peril. It will serve as a warning to those masters, if there be any, who think that they comply with the law when they place in the hold of a ship about to carry grain an arrangement of shifting boards which, whatever it may be named, or is supposed to be in the trade, does not as a fact prevent the cargo from shifting.

In this case a summons was issued against the master of the ship, at the instance of the Board of Trade, and, as no discredit attaches to him for the loading, and much credit attaches to him for the management of his ship, we give his name. John Broadhead was charged that he being master of the steamship *St. Petersburg*, in the month of December, 1877, did unlawfully and knowingly allow a grain cargo to be shipped on board the said vessel for carriage on a voyage from Revel to Hull, contrary to Section 22 of the Merchant Shipping Act, 1876; to wit, in not securing the said cargo, of which more than one-third consisted of grain, from shifting, by boards, bulkheads, or otherwise.

The gist of the whole section, its entire efficiency, rests on the insertion of the words "*or otherwise.*" Our readers will recollect that this clause of the Bill as originally drawn was a humanitarian clause, and was hard and fast in its requirements, and did not contain the words "*or otherwise.*" Our readers will also recollect that a great outcry was raised when those words were inserted at the instance, as every one well understood, of the permanent officers of the Marine Department. Little did those who then raised the outcry against those words as "*emasculating*" the Bill, know that they would, as they have, become the words which have made the clause workable in practice, and, at the same time, so comprehensive in its wording as to bring within its scope cases that would not otherwise have been reached.

In the present case there was no doubt whatever that the cargo had shifted, and there was, therefore, as a direct consequence, no doubt that the penalty of £300 had been incurred. For whenever a grain cargo carried in bulk is found to have shifted the penalty is *ipso facto* incurred, and the Board of Trade have only to prove two things : first, that a certain person had charge of the loading ; and, secondly, that the cargo in bulk has shifted, and no magistrate in the country can decline to convict. We pointed this out in 1876, but it is not until 1878 that our views have been upheld by a legal tribunal.

We must, however, give some details of the present case, because our readers ought to know what arrangement has been specially and publicly condemned ; but, in giving details of the present case, we must also ask our readers to impress on their minds that any system of shifting boards, be it whatever it may, that does not wholly and effectually prevent the cargo from shifting is as absolutely illegal, and as clearly and thoroughly subjects owners, masters, shippers, and agents to the penalty of £300, as does the arrangement of " bulk " loading we are about to describe. The ship took on board her cargo at Revel, in December. In the forehold, oats in bulk, with a layer of some 4 or 5 feet of hemp bales on the top ; in the mainhold, linseed in bulk ; and in the afterhold, oats in bulk. The stowage of the cargo was superintended by the master and the mates, and the vessel was fitted with permanent shifting boards extending 36 inches downwards, and on the hatch were temporary shifting boards fitted with screw bolts to the permanent shifting boards. The vessel met with very bad weather, a circumstance not at all unusual in the month of December in these latitudes, and more than that, the circumstance against which all this legislation and these shifting boards and other precautions were expressly devised, or at all events, if not devised, intended by their framers to meet. The cargo of oats in bulk in the forehold did not shift ; it had a layer of hemp and bales on the top ; it was effectually secured " otherwise " than by boards. It is not clear from the report before us whether the oats in the afterhold did or did not shift, but it is quite clear that the linseed in the mainhold with the 36 inch shifting boards did shift, and the list

was so great that the distance from the covering board to the water on the one side was only 2 feet 7 inches, whilst it was 8 feet 1 inch on the other side. The cargo in the hold might not have shifted in fine weather in summer, and if it had not, no penalty would have been incurred, but the *permanent* arrangement in this ship was relied on for winter as well as summer, and for linseed as well as for other sorts of grain, and the cargo did shift and the legal consequence follows.

It was proved that the master bore an excellent character, that the weather and sea were exceptionally bad, and his seamanship exceptionally good, and Mr. Travis delivered judgment of which the following is the substance :—

“In considering this case it must be borne in mind that the Legislature has, in the 22nd Sec. of the 39 and 40 Vic., c. 80, expressly prohibited the carrying on board of any British ship of a cargo of which more than one-third consists of grain cargo; but the object of that prohibition was not to prevent *in toto*, but only in order to secure the carrying of grain cargoes under certain regulations, so as to prevent accidents from the shifting of such cargoes; and, therefore, the prohibition is made to cease entirely if such grain cargo be contained in bags, sacks, or barrels, or if it be secured from shifting by boards, bulkheads, or otherwise. The Legislature, as I understand the section, says you may carry grain cargoes in bags, sacks, or barrels, without any hindrance or liability (whatever may happen in consequence of doing so); or you may carry grain cargo in any other manner, but if you do it must be secured from shifting, and you shall only carry the cargo referred to at all on these conditions. I am of opinion upon this part of the section that the grain cargo cannot be held to have been ‘secured from shifting’ if during the voyage it should be found to have shifted, owing to stress of weather, or otherwise. It is not necessary for boards or bulkheads to be used at all, the section expressly providing that grain shall be secured from shifting ‘by any other means,’ and in this very case the cargo in the forehold was secured from shifting by bales of hemp being laid upon it. In the construction I put upon the section it becomes comparatively immaterial (in coming to a conclusion whether an offence has been


committed or not) what depth from the main deck shifting boards, not named in the Act, but of which we have heard a good deal, may extend—though, if required, in this case I have no difficulty in deciding that the shifting boards have been insufficient. Any combination of boards or bulkheads, whether supposed and intended or not at the time to effectively secure the grain cargo from shifting may be used, but if they prove to be insufficient to secure the grain cargo from shifting, the party who has sanctioned their use will, in my opinion, be liable to be prosecuted for having allowed a grain cargo to be shipped contrary to the provisions of Section 22, and will be thereby liable to a fine of £300. The Legislature does not appear to me to have intended to give any sanction to the unrestricted shipment of grain cargoes in bulk, and in effect appears to insist upon all grain cargoes in bulk being of necessity secured from shifting, so as to make them practically as secure as if in bags, sacks, or barrels. The result is that, under Section 22, a highly penal offence must have been committed if any shifting of grain cargo in bulk should take place under any circumstances. It will be seen that, in the construction I put upon Section 22, Captain Broadhead has rendered himself liable to the penalty of £300. It is the first case under the Act. I should wish it, however, to be understood that I shall feel it my duty, if any similar case should be brought before me, to award a very heavy fine, in accordance with the intention the Legislature seem to have had in view."

We may not be out of place if we now refer to an incident in the "Grain Cargo" controversy. Our readers will recollect that an attempt was made, which was through the instrumentality of certain members for inland towns successful for a time, whereby the British taxpayer supported surveyors at foreign grain loading ports to survey British ships—a most useless and mischievous proceeding; whitewashing in some cases those who ought to have come within the law here; and interfering in many cases with those who had not broken the law at all. If in the present case a surveyor at Revel had certified or reported that the ship was safe or that the law was complied with, or if, without going so far as that, he had surveyed her and had not detained her, that very

fact would in itself have rendered the law powerless. It would have been a whitewashing process. The more we see of these cases the more we are satisfied that our views thereon are sound, viz., (1.) That statutory preliminary surveys and certificates are an evil rather than a good, and that safety is alone to be found in pushing the doctrine of personal responsibility to its legitimate limits; (2.) That *per contra* the shipowner and shipbuilder, whether he be the greatest light in his profession or calling, or the dimmest rushlight, is from the purely shipowning view very short-sighted if and when he asserts that he would rather be subject to personal responsibility without surveys, than have surveys without personal responsibility.

It must be one thing or the other; we say plenty of personal responsibility and no survey: not only as regards ships, but as regards mines, railways, and factory boilers. What the country will not tolerate, is what some persons appear to be aiming at, that is to say, a survey after their own hearts, conducted under rules to be made by themselves, in a manner and to a limit they will prescribe; and a Government certificate of indemnity on the back of that. They to make the rules and say how the survey is to be done, and the Government to be responsible. That is their idea of a fair division of labour, one side to get the profit without harassment, and the other side to take the responsibility on perfunctory survey. The British taxpayer will, however, scarcely think it worth while to keep up "an army of surveyors" for such a purpose. It would to him be worse than cutting out the word "otherwise," from Clause 22.

OUR COMMERCIAL RELATIONS.—UNITED STATES.

UR commercial relations with the United States of America, so far as they are regulated and controlled by treaty, may be said to have originated with the treaty of peace and friendship, which, in December, 1814, concluded the unhappy maritime contest, in which we had, during the two years, been engaged with the States of the Union. This instrument was followed shortly afterwards, on the 3rd of July, 1815, by a treaty of commerce and navigation, framed on the reciprocal principle, and containing a stipulation for favoured nation treatment; this treaty was incorporated with and continued by the treaties of the 20th of October, 1818, and of the 6th of August, 1827. From the latter date until 1854 no fresh engagement relating to commerce or navigation was entered into between Great Britain and the United States, if we accept a convention relating to the piercing of the Isthmus of Panama by a ship canal, concluded on the 19th of April, 1850. In 1854, however, a very important treaty was concluded with the United States by England on the part of Canada. That arrangement known as the treaty of reciprocity, stipulated for the interchange of the products of the States and of Canada, and their importation into the respective countries on advantageous terms, and it also provided for the opening of the colonial fisheries to the Americans on certain defined terms, and for reciprocal treatment in the navigation of the lakes and of the St. Lawrence. This treaty, which was confirmed by Act of Parliament in 1855, and extended to Nova Scotia, New Brunswick, and Prince Edward Island, was in force for some years, and there is no doubt that its provisions conferred material benefit upon the trade, both of the United States and of the North American provinces, the balance of advantage resting perhaps with the States. Unfortunately this beneficent arrangement came to a sudden and enforced conclusion. The victorious party in the American Civil War took umbrage at the tendency of opinion in this country, which was favourable on the whole to the South, and they connected us directly and somewhat unfairly with the ravages committed upon the American

commerce by the *Alabama* and the other Confederate cruisers. The war had scarcely concluded when the Government of Washington gave notice to our Government that the treaty must terminate. This notice was given on the 17th of March, 1865, and on the 17th of March, 1866, the Treaty of Reciprocity of 1854 ceased to be an operative instrument. Deprived of its provisions, the British colonists fell back upon the treaty of 1818 for the protection of their fisheries, the limits of which were constantly violated by the Americans. These repeated violations led to active measures on the part of the British authorities, the right to adopt which was disputed by the American Government, and, at one time, it looked as if a dangerous complication was imminent between the two countries. Happily the Americans were induced to take part in negotiations for a treaty which should provide for the settlement of all outstanding differences between Great Britain and the States. The result was a treaty concluded at Washington in 1871, the subsequent settlement of the Alabama Claims, and of the San Juan question, the appointment of a mixed Commission to examine into the claims of British subjects whose property had suffered during the Civil War, and of another Commission for the settlement of the fishery dispute, and for adjusting the claims of the colonists preferred for alleged invasion of their fishery rights. All these matters have now been settled. The money awarded by the Geneva Arbitration on account of the Alabama Claims was promptly voted and paid over. The award of the Emperor of Germany in the San Juan affair was eminently satisfactory to the Americans. The mixed Commission at Washington made restitution of a considerable amount of property which had been condemned and confiscated in the American Prize Courts, and the Commissioners who more recently sat in Halifax have settled the fishery question, and an amount has been awarded to the British claimants in this matter, the liberality of which has taken the American Government and Congress wholly by surprise, though it has been accepted and met in a very proper and even generous spirit. The gradual and effective settlement of these differences have tended to place our relations with the United States, political and commercial, on a settled footing, and to bring about a state of


things long desired by the most far-seeing and the most enlightened public men of both countries, but for a long time, and owing to a combination of circumstances, difficult, if not impossible, of attainment. The statistics of the trade of England with the United States during the past five years, while they mark a recovery from the state of things directly resulting from the effects of the war, are otherwise worthy of attention. In 1872 the value of the imports into the United Kingdom from the United States was over fifty-four and a half millions sterling; while, in 1876, this value had risen to nearly seventy-six millions. In the same period the exports from the United Kingdom to the United States, which, in 1872, were valued at more than eighty-six millions and a half, had declined in 1876 to something over thirty-seven millions. It would seem, therefore, that the balance of trade, which in 1872 was largely in our favour at the close of the quinquennial period, has shifted, and now shows a somewhat larger amount in favour of the United States. But no argument unfavourable to our trade relations with the United States can be drawn from this state of things. Our commerce with the American Union is still a splendid business of exchange, and figures imposingly in our annual statement of trade and navigation. It is to the United States that we still look for the great supply of the staple on which one of the great industries of the country depends, and for still more needful supplies of provisions. In 1876 we imported twenty millions worth of American cotton, seven millions worth of bacon and hams, two-and-a-half millions worth of cheese, and twenty millions worth of corn, barley, oats, pease, maize, wheat, meal, and flour. It is true that during the same year the exports to America of our chief staples—cottons, linens, iron, and woollens—exhibit a decline. But so long as we can supply our wants in a market where our merchants can purchase with advantage, in which advantage the consumer in this country must participate, we need not complain because the produce of the United Kingdom is not placed in any particular direction and to the same extent as formerly. The old theory of the balance of trade might have been correct when applied to the transactions of a very limited number of States with each other;

but in the gigantic commerce of England, entering as it does, into the markets of all the nations of the earth, a decline or deficit in one direction is made up in another, and can hardly be said to affect the general result, which has for years exhibited a steady increase. Our trade with the United States is still sufficiently large, however the balance may incline, to make our commercial intercourse with that great country a subject of deep and abiding interest to the people of Great Britain and her dependencies—an interest, it is true, which cannot be said to be decreased by reason of the apprehension that the commercial policy persistently pursued by America may, at no distant time, lead to a divergence of a large portion of the trade which has been and is still done by the United States with England, and with the whole of Western Europe. Recently—that is in August, 1876—a commission was appointed by the Senate and the House of Representatives of the United States to enquire (amongst other things) into the effect which the change that has taken place in the value of gold and silver, has had upon the trade, commerce, finance, and productive interests of the United States. In the very able report of that Commission we find the following remarks, which are worthy of most attentive consideration. “Looking to the facts that the western nations of Europe and the United States are situated in the same general climate, that they are nearly upon an equality in the perfection to which they have brought the commercial arts, and further, that they appear to be nationally commercial rivals rather than customers, they say that the commercial intercourse between Western Europe and the United States divides itself into two parts, the exports of articles indispensable to Europe, such as cotton, the cereals, tobacco, and the products of animals, a trade which needs no stimulant or favour of any kind; secondly, the imports from Europe of manufactures. This latter,” observe the Commissioners, “is a trade which all parties, and the representatives of all shades of commercial opinion in this country, wish to see steadily diminishing and eventually terminated. The reasons which conduce to this uniformity of desire are very diverse, as also are the modes proposed to accomplish the object sought. Some propose protective tariff and high duties as the best means; others

maintain that the better if not the only way to keep out European manufactures is by the production in this country of superior articles at lower prices, and that this is only possible with free trade, or simply a revenue tariff, and cheap raw material. But by whatever way it may be reached, a diminution tending always to an extinction of imports from Europe is universally desired in this country. It is in trade with other parts of the world in less advanced stages of civilization, or with essentially different systems of civilization, or with essentially different raw products resulting from marked diversity of climates that we find the natural outlets for our manufactures, and in many cases the opportunity for a mutually advantageous exchange of native productions. It is not perceived that that trade can become too large. All interests and opinions favour its expansion, and, unlike the trade with Western Europe, its existence and extent depend upon the wisdom and vigour of our efforts to secure and increase it. Our trade with England would be but little affected if we should be entirely passive in relation to it. With China, on the other hand, we have no trade which we do not actively seek. Commercial nations will seek after our trade. We must ourselves seek after trade with the non-commercial nations." These are ominous words. Ominous because we believe they reflect the views of the great majority of the leaders of public opinion in the United States. The idea of making the Union self-contained, and independent of foreign intercourse or relations has long been the dream of American statesmen. How, in these days, and in the days that are to come, a great country like the United States is to exist in the absence of commercial intercourse with civilised nations, is a problem which the future may solve, but that seems, in the present aspect of the world and the relations of States, to be absolutely incomprehensible. There is a notion amongst the public men of the States that, possessing a magnificent country, lying under parallels of latitude in which every variety of climate is found, with a soil capable of limitless production, and separated from the nations within the circuit of civilisation by thousands of miles of sea, America may, if any nation can do so, become independent of foreign trade relations. In this view—possessed by this infatua-

tion, may we not call it?—the statesmen of America have clung to protection in defiance of the evidence, clear as the sunlight, that their policy was unsound, and was working widespread mischief. If our exports to the United States, in common with the exports from Western Europe generally, are met by hostile tariffs, the real sufferers are not the European exporters—including, of course, our own producers—but the people of the United States, who are compelled to pay for articles of daily necessity an advanced price in order to satisfy the prejudices or the visions of those who direct public affairs in that country. In the face of every effort to discourage the trade with Western Europe, that trade with the United States is still a large branch of the world's commerce. The trade of this country and her Dependencies with the Union, although as an export trade it has declined, is still a very important matter—more important, perhaps, if the truth were known, to the United States than to England. The disposition of those who direct public affairs, and who lead public opinion in the States, is unquestionably to decrease and even to extinguish this trade. But the course of events is stronger than the resolute will of the strongest statesman, and, where the necessities of a people point in a certain direction, they will not only make themselves felt, but they will overpower in the end every opposition. It is a subject, no doubt, of congratulation that in the present aspect of our commercial relations with the United States all those political questions which were calculated to engender a feeling of irritation and of asperity towards this country have been laid at rest, and that the future commercial policy of the American Union, whatever its tendency or direction, will be uninfluenced as regards this country by any feeling resulting from political complications. England is and must ever be justly proud of the splendid achievements of the American Republic. She recognises in these achievements, and in the spirit which has produced them, more than a renewal of her own youth. The continued prosperity and elevation amongst the nations of the American Union are looked for and earnestly desired by every enlightened Englishman, and the only anxiety amongst those in this country capable of appreciating the present position of the United States is that she may not miss the direct road which leads to the high destiny which should be in reserve for her.

ROCKETS v. MORTARS FOR SAVING LIFE FROM SHIPWRECK.

UR readers will, no doubt, remember that a question of great importance has long been pending between Messrs. Rogers and Anderson and the Board of Trade on the subject of saving life from stranded ships. So many testimonials and medals had been awarded to Mr. Rogers by various exhibitions and societies, in which the donors testified to the superiority of the mortar system over the rocket, that the Board of Trade appear to have submitted the whole question to an independent Committee of naval officers. The matter is now for ever settled, and our merchant seamen and coastguard men will, we do not doubt, have the advantage of continuing to use the rocket apparatus according to the present method. We extract the following from a return just presented to Parliament on the motion of the President of the Board of Trade :—

“REPORT upon Trials of the APPARATUS of ROGERS and ANDERSON, and the BOARD of TRADE APPARATUS, at Shoeburyness, on the 18th and 19th March, 1878.”

Admiral Sir E. A. Inglefield, C.B., in forwarding the report of the Committee, observes that :—

“Before leaving the experimental ground, the Committee requested Mr. Rogers to state whether he wished any further experiments to be made with his apparatus, and whether he had any remarks to offer with regard to the trials.

“Mr. Rogers stated that he did not desire any further trials, that he regretted he had failed, and that he did not hesitate to acknowledge that the experiments had been perfectly fair, and that every assistance had been afforded him by the Committee, the Board of Trade, and the local authorities.”

And from some of the paragraphs in the Committee's Report which precedes their answer to certain specific questions, they inform the Board that—

“ . . . It was noticeable that the mortar apparatus was very much lighter in appearance than the rocket apparatus ; but on

moving out to the scene of operations, a distance of $4\frac{1}{2}$ miles, the rocket cart with a pair of horses conveyed the whole party of 16 individuals to the spot, while the mortar cart, drawn by one horse, could only accommodate the driver and one man in charge, the whole of the rest of the party having to be conveyed in a spring waggon with a pair of horses.

“The mortar apparatus appeared to the Committee to be incomplete in stores, spare gear, and what is considered by the inventor as essential when dealing with long distances, viz., a larger and much heavier mortar than the one carried, which weighed 67 lbs., being the size in the specification lodged with the Board of Trade. A mortar of double this weight was found on the practising ground, and used during the experiments, having been carried there some time previously.

“The Committee did not lose sight of the circumstances under which these rival forms of apparatus had been presented for trial. The Board of Trade life-saving apparatus being a perfected machine after years of active service and long experience in all parts of the United Kingdom, while the mortar apparatus produced by Mr. Rogers, involving his so-called new principle, may be fairly looked upon as immature, and, by his own admission, requiring several alterations as regards manufacture and materials.

“The brig, having on board Commander Prowse, six coast-guard men, and a crew of six, was placed, by direction of the Committee, at a range of 205 yards from the sea wall; this, however, being known only to themselves.

“At 10.50 a.m. the rocket apparatus was called up, and the first series of experiments was commenced, and these were proceeded with as shown in an accompanying table. . . .

“The Committee desire here to remark that their first plan for the progress of the competitive trials was soon abandoned, as the constant failure of the mortar apparatus to obtain even communication with the brig at once satisfied them that it would be merely a waste of time and material to fire the rocket shot for shot with the mortar. They were, moreover, most desirous to see the result of a successful shot from the mortar, and the effect of the cone-block, with its whip being thrown amongst the rigging.

"On returning to the ground about 9 p.m., the experiments were resumed, the tide having ebbed sufficiently to enable the mortar apparatus to be placed on the beach 63 yards nearer the vessel, and thus the cone-block was successfully thrown on board, and a man landed in 12 minutes 8 seconds from the time of firing the mortar.

"This time, however, cannot fairly be put into competition with the time noted in the first experiment with the rocket apparatus, as, in the first place, the distance was so much shorter, and, in the second place, the apparatus was prepared during dinner time, and Mr. Rogers was not required to replace his stores upon the cart previous to the word "action"; and owing to the state of the tide, not only was the hawser carried by hand nearly half of the whole distance between the ship and the first position, but the breeches buoy was handled in a similar manner, and the time noted by the Committee as having "landed a man" really represented his leaving the breeches buoy at low-water mark . . .

"The partial success obtained by Mr. Rogers decided them to institute a fresh series of trials on the following day, when the cone-blocks had been recovered.

"At 9 a.m. of the 19th, the Committee were again on the ground, and firing was commenced by the mortar apparatus, with the intention of making it a competitive trial, as at first proposed.

"The result of these experiments is shown in an accompanying Table; but after the first success of the rocket and failure of the mortar, the Committee again abandoned the competitive plan, and the rest of the time was devoted to renewed attempts to obtain communication with the vessel by the means of the mortar.

"The replies, *seriatim*, to the questions contained in the letter forwarded by the Board of Trade for the consideration of the Committee are as follows:—

"1. *Question.* What are the times occupied by the two apparatus from the time of starting from any given point up to the time when the first shot is fired at the supposed wreck?—*Answer.* Owing to the different forms and conditions of the travelling gear of the two apparatus, this trial was not put to the test.

"2. *Q.* What is the time taken by each apparatus to land the

first man from the order 'action' ?—*A.* By reference to the tables, and remarks appended, it will be seen that no opportunity was afforded the Committee of making any comparison, but they wish to note it as their opinion that the rocket apparatus is capable of landing a man with certainty in a time varying under circumstances from 15 to 20 minutes after arrival on the spot.

" 3. *Q.* Which is the safest apparatus to fire at a vessel crowded with people ?—*A.* In reply to this question, the Committee desire to express most emphatically the great danger of firing a projectile weighing from 10 to 24 pounds on board a vessel under any circumstances, as much from its giving no indication of its flight either to the shipwrecked crew or to those operating on shore, as well as the after danger and difficulty which would be incurred by those on board, when it has obtained the object for which it was fired.

" 4. *Q.* Which apparatus is best suited to be carried by hand down cliffs, or over a difficult coast, where a cart cannot approach closely to the position for firing ?—*A.* Undoubtedly the rocket.

" 5. *Q.* Are the Committee of opinion that it is preferable to fire with a single or a double line ?—*A.* After witnessing experiments made by the rocket party as well as by the Royal Artillery, in throwing a double line by means of a rocket, we are clearly of opinion that, although the experiment was in each case successful, nevertheless we unhesitatingly recommend the single line to be used in all cases, being of opinion that there is no practical utility in the use of the double line.

" 6. *Q.* What number of cone-blocks do the Committee think it would be necessary to keep at any one station, and how many should be kept in the cart, remembering that the one apparatus may be employed in rescuing life from several ships on the same night, without returning to the station ?—*A.* The result of the experiments, as shown by the Tables A and B, render any further reply to this question unnecessary.

" 7. *Q.* What is the range of the rocket carrying the single line ?—*A.* The range of a rocket with a single line attached was, with 35 degrees elevation, 220 fathoms, equal to 440 yards.

"8. Q. What is the range of the cone-block with rove line ?—

A. As far as the Committee could gather from the experiments made, the extreme range of the 11-lb. cone block with rove line impelled by a charge of 6 oz., was 150 yards. Any increase of powder with a view to increase the range resulted in the line or the strop being parted.

"9. Q. What is the general opinion of the Committee as to the serviceableness of the two apparatus ?—A. The general opinion of the Committee can be answered in a few words, by saying that the principle involved in the mortar apparatus, even had it been successful, could not be recommended for adoption ; and further that the rocket apparatus, as exhibited to the Committee, and experimented upon in their presence, seems so perfect in its construction, details, and manipulation, that it appeared to them as hardly possible of improvement.

"In concluding these replies to the questions put by the Board of Trade, the Committee desire to state that should the failure of the mortar apparatus be attributed to a deficient carrying power in the mortar, they wish that it should be noted that whenever a larger charge was used in a larger mortar, the results were equally unsuccessful, while the danger of firing so large a missile was increased, and the whole question of transport becomes seriously involved.—(Signed) E. A. INGLEFIELD, Vice-Admiral ; HENRY D. GRANT, Captain, R.N. ; CHAS. G. WELLER, E.B., Trinity House, London, 20th March, 1878."

BOOKS RECEIVED.

Anleitung zum Betriebe und zur Instandhaltung der Schiffsdampfkessel und Schiffsdampfmaschinen. By J. Fassel, k.k., Maschinenbau-Ingenieur. Vienna : Carl Gerold's Sohn. 1878.

THIS book may be briefly Anglicised as *Instructions for the General Management of the Marine Engine*. It is not large, but it is none the less a useful compendium for the engineer, and is written

by a professional expert who knows what he is writing about, how to explain what he means, and for whom his book is needed. A glance at the contents will show how varied are his observations: They relate to the engine, marine boilers, sea valves, cocks, the different values of coal, the oils for lubricating, &c., the engine at sea, or in harbour, and how to execute repairs on an emergency. We consider the work highly deserving of notice, and trust it may have a good circulation.

Die Seehäfen und Seehandelsplätze der Erde, nach ihren hydrographischen, nautischen und commerciellen Beziehungen. Edited by J. C. Jülfs und F. Balleer. Oldenburg: C. Berndt and A. Schwartz. 1878.

THE publication of this work may be taken as evidence of the increasing interest which is now paid to maritime and nautical subjects in Germany. Until recently the German shipmaster had been contented to purchase his *Sailing Directions*, *Pilotage information*, *Port Charges*, &c., in an English dress, but now he will no longer need to trust to the labours of foreigners, for he will have what he requires in his own language, compiled by his own countrymen. The work before us, *the Seaports and Maritime Trading Places of the World*, is at once nautical, hydrographical, and commercial. It consists of sailing directions and port charges, together with a great mass of useful information collected from many sources—precisely what a trading shipmaster desires to know. Vol. I. includes Asia, Australia, South America, and the West Indies; Vol. II. embraces Central America, Mexico, and North America; Vol. III. is to take up Europe, and the first part, now published, deals with Spain, Portugal, and the Mediterranean coast of France. The information is concise, comprehensive, and accurate, and does credit to the editors.

CORRESPONDENCE.

LIGHTS IN THE RED SEA.

To the Editor of the "Nautical Magazine."

SIR,—It has long been a subject of wonder to me in this age of progress and improvement that something has not been done to facilitate Red Sea navigation with regard to lights.

There was a proposal some seven years since to build a light on the Brothers, but there it ended.

You are no doubt aware, though others may not be, that from Ashrafi in the north to Perim Island in the south, a distance of over 1,000 miles, we have only one light (the *Dædalus*), and that a very uncertain one, to guide us in this long, narrow sea, full of hidden coral reefs and eccentric currents governed by no regular law and never to be calculated for.

Now, to make it safe for ordinary navigation in dirty weather and dark nights, which are not infrequent, I would suggest that lights placed in the following order are absolutely necessary.

Commencing north, the dangerous reef of Sherateeb, on the east side of the Gulf of Suez, should have a light-vessel on it; a large steamer last year grounded on it and became a total wreck.

Next the Morseby Shoal, right in the fairway, and close to the entrance of the gulf, for which there is no guide but the bearings of Ras Garib, which may be, and often is, shut in during thick weather. Then think of the risk—the land close to on both sides, and the reef in the middle. It should have a light-vessel.

Next in order comes Shadwan Island. A lighthouse is badly required on its south end. A large passenger steamer some time since, coming from the southward, got inside to the westward of it, mistaking the land at night, grounded on a reef, backed off, and sank in deep water. Had the light been there, she could not have mistaken the land, and would have, perhaps, been afloat for years to come.

Then the Brothers before-mentioned—on which another valuable

steamer was lost—two small, low islets, difficult to see on a clear, and impossible on a dark and dirty night. These lie right in the track, and must be steered for, or close-to, that the ship in coming from the southward may not miss the entrance of the gulf and get on the numerous reefs to the eastward and westward of it, and yet see no land.

Next comes the southern and even more dangerous end, in lat. 17° N., where the reefs extend far off the main land, leaving a very narrow gut of clear water for safe navigation. Now where this begins, at the northern end, there are two small islands, first, Wasliyat, on the east, and second, Harmil, on the west. These islands seem placed by the hand of Providence to be utilised as light stations; at present there is no guide in running for this dangerous locality, and the most careful navigator may be set by the currents either east or west, without knowing it, having had no observation the day before, and may find his ship on a reef out of sight of all land, and, to all appearances, in clear water. With good lights on these islands this could not occur, with common prudence. The lead here is of no use, as you may get 500 fathoms in one cast and be on shore before you get the line in for another, and the currents are peculiarly strong and erratic.

Then Jebel Tier, a lighthouse on either its eastern or western extremity so as to be seen either from the northward or southward would be of incalculable value, as the island is right in the fairway, and must be sighted to clear the reefs.

Further south the small islands of Abu-Ail, two miles N.E. of Jebel Yukur, require another light, as it is often very hazy here at night, and steamers have been known to lose half the night *groping* for the island. From thence to Perim Island might remain as it is for the present, though a light-vessel on the shoal off Moca would be of much service.

It seems strange that this dangerous sea, the highway of all our eastern commerce, whose fast increasing traffic has made such gigantic strides within the last seven years, should be left thus totally neglected. Is it that it is nobody's business? That cannot be, for it is the business of the owners, underwriters, and masters of all India-going steamers passing through the Suez Canal.

We masters can only point out the necessity for improvement, but those interested on shore should unite in every effort to obviate an evil so fraught with danger and destruction to valuable lives and property.

I might have written a much more exhaustive letter on this important subject, but, as it is the first throw of the ball, I look to your numerous and talented correspondents to "keep it rolling" until we set matters in this particular to rights.

Yours, &c.,

CHAS. AUGT. SIBTHORPE,

s.s. *European*,

Hughes' Line, Liverpool.

Port Said, May 30th, 1878.

APPARENT AND TRUE DIRECTION OF WIND WHEN SAILING.

To the Editor of the "Nautical Magazine."

SIR,—Suppose a ship to be sailing at the rate of 8 miles an hour, 66° from the apparent direction of the wind, force of which is 5 (Beaufort's scale), say velocity 28 miles an hour. How far is the ship's head from the true direction of the wind?

Yours, &c.,

28th May, 1878.

SHIPMASTER.

[For the solution of this problem the arguments are—the apparent velocity of the wind, the angle of its apparent inclination to the ship's course, and the ship's rate (speed) of sailing. "Shipmaster" says, "sailing 66° from the apparent direction of the wind," which is indefinite; the wind may be 24° before, or abaft, the beam. We answer both.

1. If the apparent direction of the wind be 24° before the beam, that is, 114° to ship's course, the wind would appear to be $16^\circ 27'$ more ahead than it actually is,—such being its apparent divergence from its actual direction; and though its apparent direction is 114° to the ship's course, yet its actual direction over the water would be $97^\circ 33'$ to the ship's course; hence the ship's head would be $82^\circ 27'$ from the true direction of the wind. The actual velocity of the wind would be 25·8 miles per hour.

2. If the apparent direction of the wind be 24° abaft the beam, that is 66° to ship's course, the apparent divergence from its actual direction would be $18^{\circ} 10'$, by which amount it would appear to be too much forward; hence, though the wind's apparent direction be 66° to the ship's course, yet its actual direction would be $52^{\circ} 50'$ to ship's course, in which case the ship's head would be $127^{\circ} 10'$ from the true direction of the wind. The actual velocity of the wind would be 32 miles per hour.—*Ed. Nautical Magazine.*]

Note.—For the true direction of the wind, you have given the two sides of a triangle and the included angle. For the true velocity, the sides of a triangle are to one another as the sines of the opposite angles.

RULE OF THE ROAD AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—I notice in Mr. Thomas Gray's latest work upon the "Rule of the Road," a short chapter devoted to the consideration of a special case, which he rightly calls one of extreme danger. It is that of a vessel with the wind on her port beam making out a green light three points on her port bow. It seems to me that there is one line of action open to the vessel on the port trim which must infallibly lead both vessels clear, and that is to "close-haul" her instantly. By doing so, she brings the green light nearly a-head, and in very short time the running ship will make out both her side-lights and see that she is close-hauled. Then (1) under the present rules, the running ship can either run on and allow the port tack to luff across her stern, or (2) she can port her helm and bring her own two lights to bear upon the close-hauled one (thus showing that she is giving way), when the vessel on the port tack can at once *port* her helm and pay off again; no collision could thus occur. And when the new rules come into force (by-the-bye, when will that be?) it will be better still, because the vessel on the port tack will simply have to close-haul and stand on, leaving all the onus of the affair upon the running vessel.

Of course I have assumed that there is plenty of room, as Mr. Gray has done so, giving a mile and a half as the probable distance between the two vessels. In thick weather, and a sudden discovery of the opposing lights, great caution would have to be exercised, but even then I think the "close-hauling" of the port tack and the "running-off" of the other vessel would clear them. One hears some trifling growling at the custom of *reciting* the new *rhymes* which has come up in the examination-rooms of late, but I think it is a very good idea, and that the new rhymes are more precise, useful, and forcible than the old ones, as they make the youngster put himself into the responsible position and think what he must do, instead of what the other fellow's duties are under the circumstances. Hoping you will pardon the length of this letter, my only excuse for which must be the deep interest I take, in common with hundreds of your readers, in the Rule of the Road.

I remain, Sir, your obedient servant,

ARTHUR B. MARTIN.

Nautical Academy, 157, Leadenhall Street, London.

YENICALÉE BAR.

To the Editor of the "Nautical Magazine."

SIR,—Under the above heading, in which your readers will recognise an old friend, I am anxious to show that the earnestness with which I have pleaded for the widening of the Channel—which is perfect as far as it goes—is not without constant proofs of its necessity. It may be remembered that in October, 1876, a steamer, measuring 240 feet, got athwart the Channel, where the entire breadth was only 247 feet; if she had remained there hard and fast, the navigation of the Azof would have been effectually closed without an ukase of His Imperial Majesty.

The following is also a case in point:—Two British steamers collided, the *Wimbledon* and the *Commodore*. The latter sunk in 18 feet water, and her stern reached the centre of the Channel; and there she lay to the great consternation of the Russian

authorities, who, to prevent this impediment to the navigation, thought it might be advisable to blow her up. In the meanwhile, a Club agent arrives from Newcastle, a man of great experience and *savoir faire*. He commenced operations about the middle of May, having ordered a steam pump from Sevastopol. These operations consisted of three distinct labours—all more or less herculean. First, to fill up a hole in her side 16½ feet long by 8 feet wide; secondly, to pump her out, after clearing away the mud; thirdly, to float her.

On the 22nd May she floated, and was brought into Kertch on the 26th; and on the 27th she proceeded to Sevastopol for further repairs, steaming with her own engines.

The kind and gratuitous assistance rendered by the Commandant of the Russian gun-boat *Pruth* is beyond all praise. He performed the office of a tug, and immensely facilitated the operations. The Club's agent was indefatigable, passing his nights almost in the water, and acting throughout with the greatest *sang froid*; the only matter that appeared to disturb his tranquility of mind was the old pump, which had rendered him good service, but which, when done with, he showed a most impatient anxiety to get rid of; as man generally does with his best friends.

The foregoing casualty tends to prove the urgent necessity of the Channel being widened; at present, with the unusually large number of steamers arriving in the Kertch Roads, such as, I believe, has never been seen, I am daily apprehensive of some catastrophe. Last week a steamer only escaped a violent collision by running aground in the mud; and any day I may have to report the closing of the passage to the Sea of Azof.

Before concluding these remarks, I would be glad to call the attention of shipowners to the fact that they send steamers of too great a tonnage to these ports. The Channel is not suited for such ships, which may have to lighten when the wind blowing down drives the water before it, as is frequently the case.

I am, Sir,

Your obedient servant,

PETER BARROW,

Kertch, 1st June, 1878.

H.B.M.'s Consul.

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all communications should be addressed.

ENGLISH (APPLICATIONS).

1948. Martin Bourke, David M. Wilson, Benjamin J. Morris, Henry Bryson Shields, David S. Williams, Thos. Morris, and David T. Harriett, all of Youngstown, County Mahoning, State of Ohio, U.S.A. "Improvements in lifeboats," and,

1949. For "Improvements in boat-lowering apparatus."

1965. Samuel H. Stockton, St. John's, New Brunswick, Canada, temporarily at the Patent Office, 6, Lord Street, Liverpool. "Improvements in anchors."

2047. Edmund S. Hunt, Weymouth, Massachusetts, U.S.A. "Improved apparatus for use in case of shipwreck to effect communication between the wreck and the shore, and for other like purposes."

2063. Wm. E. Leslie and Nathaniel Hamblin, Blackwall, boat builders. "Improvements in lifeboats."

2068. Sidney Pitt, Sutton. "Certain new and useful improvements in machinery for propelling vessels, some of which are applicable for other purposes."

2088. Bottomley Woodcock and Samuel Birkett, Cleckheaton. "Improvements in signalling apparatus, applicable to locomotives, steamships, and similar purposes."

2122. Thomas Archer, Jun., Dunston. "Improvements in the means of securing ship's cables, hawsers, or other ropes or chains bearing a pulling strain."

2128. James Bond, Chipping. "Improvements in roller or anti-friction bushes for the sheaves or pulleys of ships and other blocks."

2152. Henry de Burgh-Lawson, Baronet, Gatherly Castle,

Yorkshire. "Improvements in the construction and propulsion of armour-clad ships and vessels in general."

2181. Howard Pullar, Perth, engineer. "Improvements in and connected with screw propellers and their shafts, and in part applicable for governing or controlling, or for measuring the power transmitted by other rotating shafts."

2227. James Watson and Leonard Watson, Sunderland. "Improvements in steam steering apparatus."

2254. William Cowley, Liverpool. "Improvements in and relating to apparatus for ventilating ships and other structures or spaces."

2276. James Adams, Maldon, Essex; Frederick Wm. Flower, Hammersmith, Middlesex. "Improvements in wind engines for propelling of boats and other vessels, for pumping of bilge water, and for other purposes where motive power is required."

2301. Loftus Perkins, Gray's Inn Road, Middlesex. "Improvements in propellers for ships and vessels."

2344. Noah Smith Woodward, Quebec, Canada. "An improved horn or whistle apparatus, chiefly designed for the protection of ships in foggy or stormy weather."

ABRIDGMENTS.

8654. Wm. Atkinson, London. "Improvements in the mode of and apparatus for raising sunken ships and other submerged bodies." This is an oval-shaped buoy, fitted with a false bottom dividing it into two compartments, with a water-tight valve fitting between. From the bottom compartment are two pipes leading to the sea, and from the upper compartment one leading to the air. To operate the buoy, the valve between the two compartments is opened by means of a lever, which causes the buoy to fill and sink, and, when attached to the submerged body, air is pumped in through the top pipe driving the water out again, and when empty, the valve is closed and the buoy, &c., rise to the surface together.

3741. Edwin Lawrence, Hyde Park, Middlesex. "Improvements in compositions for coating the bottoms of ships and other vessels and other surfaces." This consists in mixing granulated or

powdered zinc with the paint or varnish, and coating the ship with it up to the water-line.

3764. John Moysey, London. "Improvements applicable to screw propellers." This relates to the feathering of the blades of screw propellers from within the vessel, so that they may be placed at any angle with the main shaft. The propeller shaft is made hollow as far as the after length or part thereof; through this shaft water is pumped into the boss of the propeller. The boss is fitted with a piston, attached to the rods of which is a crank on the root of each blade. The blades are moved by forcing water to act on the piston, and by withdrawing the water the reverse motion is acquired.

3807. Joseph T. Parlour and Alexander Robinson, London. "Improvements in machinery or apparatus for raising sunken vessels and other submerged bodies, and for other like purposes." This consists of twin sinkable ships which are sunk at the sides of the vessel or body to be raised, and then raised with it. When in use they are connected by bridges constructed and arranged to meet above the vessel to be raised. These are also supplied with a series of lever arms corresponding in number to the bridges, which are adjusted under the vessel or body to be raised. To raise the sunken ships, the iron, stone, water, or other ballast is discharged or removed by means of buckets attached to endless chains, and arranged to work through slots or apertures working through a hollow mast or shaft extending up above the surface of the water in which the said ships or vessels are submerged. Cylinders or pontoons may be used instead of the sunk ships, and the invention may be modified so as to raise rocks, sand, shells, sponge, &c.

3951. Robert S. Boyer, North Shields. "Improvements in the form and construction of marine boilers." The object of this invention is to construct a boiler of the usual inside-fired multi-tubular type that shall be workable or withstand a higher pressure than the same class of steam boilers having the same thickness of boiler-shell, thereby saving fuel and doing away with the difficulty of employing boiler plates of a thickness that practically cannot be securely riveted. This consists in constructing a boiler the cross

Yorkshire. "Improvements in the construction and propulsion of armour-clad ships and vessels in general."

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8807. Joseph T. Parlour and Alexander Robinson, London. "Improvements in machinery or apparatus for raising sunken vessels and other submerged bodies, and for other like purposes." This consists of twin sinkable ships which are sunk at the sides of the vessel or body to be raised, and then raised with it. When in use they are connected by bridges constructed and arranged to meet above the vessel to be raised. These are also supplied with a series of lever arms corresponding in number to the bridges, which are adjusted under the vessel or body to be raised. To raise the sunken ships, the iron, stone, water, or other ballast is discharged or removed by means of buckets attached to endless chains, and arranged to work through slots or apertures working through a hollow mast or shaft extending up above the surface of the water in which the said ships or vessels are submerged. Cylinders or pontoons may be used instead of the sunk ships, and the invention may be modified so as to raise rocks, sand, shells, sponge, &c.

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section of which somewhat resembles the letters **BD**, joined or connected at the centre by stay-rods to admit of a quick circulation from the lower to the upper chamber. For larger boilers they are built in a series of segments resembling the smaller ones.

3945. Peter Denniston and John McMillan, Glasgow. "An improved anti-corrosive and anti-fouling composition." This is a paint or varnish for coating the bottoms of ships, composed of resin, sulphur, oxide of iron or oxide of lead or celestial blue, whiting or yellow ochre, turpentine or naphtha, boiled oil, and oxide of mercury, and with or without the addition of insoluble soap.

4168. Henry Foxton Craggs, Middlesbro', Yorkshire, Ship-builder. "Improvements in the construction and arrangement of decked vessels more especially applicable for carrying timber and cotton, and in the arrangements for loading and unloading the same." This consists—First, in arranging a longitudinal chamber over the keel extending fore and aft nearly to the ends, forming a tunnel. This tunnel is provided with one or more hatchways in the centre, or water-tight doors at each end. It can be used either as a water-ballast chamber or for the stowage of cargo. Secondly. Instead of hold beams are placed one or more strong longitudinal girders or stringer plates along each side, which, like the water chamber, are well stiffened by gusset plates. Thirdly. At intervals in the deck, holes are arranged, and guide sheaves or pulleys placed in the same so as to work the cargo direct from the steam winch instead of placing winches below. The steam pump is arranged to clear the water tank when desired. These vessels are capable of carrying very large cargoes, and are well suited to the trades for which they are designed.

AMERICAN.

202184. Charles C. Miller, Hamilton, Ohio. "Improvement in shoal-indicators for ships." This invention consists essentially of an outreaching arm attached to the bow of the boat, and a yielding tracer attached to the forward end of the outreach. In rivers or on shoals the tracer touches lightly the bottom some

distance in front of the boat, and, as variations in the level of the bottom cause the tracer to rise and fall, its relative position is shown by an index above the water. The outstretch is so attached to the bow of the boat as to allow the tracer to be moved to the right or left of its normal position, by means of which sweeping motion a channel may be searched for and found if in close proximity to the bow of the boat.

202396. Charles M. Bailey, Baltimore, Maryland. "Improvement in means for reversing propeller blades." The object of this invention is the reversal of the blades of a screw propeller without stopping or reversing the engine, and consists in attaching the blades to the hub by means of a steel rod running the whole or part of its length on which they are capable of being revolved : on the hub is keyed a moveable sleeve, attached to the blades by means of rods, which, on the sleeve being moved, work like a crank, and turn the blades so that the desired pitch of the blades may be obtained. The rod for working the sleeve is attached to a lever, &c., similar to the reversing handle of a locomotive engine.

202485. Thomas C. Thompson, Evanston, Illinois. "Improvement in gaffs for vessels." This invention is designed to prevent the chafing of the sheet, and also the chafing of the gaff on the sail when the same is lowered and made fast to the boom, and obviates the necessity of boring holes through the gaff. To the outer end of the gaff is applied a metal socket with a guide-sheave or pulley, sideways to which are arranged two rollers which prevent chafing of the sheet on the gaff recess. To the upper part of this socket are applied a number of projecting lugs in line with the pulley, which are notched for applying the cord by which the sail is lashed to the gaff instead of holes. When the gaff is lowered and the sail made fast to the boom, the end of the socket is locked to an attachment on the boom ; this consists of a hinged arm or standard that swings on a crosspin.

202488. Edward N. Twiss, Marblehead, Massachusetts. "Improvement in anchors for boats, &c." This "killick" is formed by a shank which is joined to four blades which are straight and at right-angles. The smallest end of the shank is flattened and has a

hole for a ring or cable. The end of each blade is bevelled to leave edges nearest to the shank.

202523. Thomas Cullen, San Francisco, California. "Improvement in feathering paddle-wheels." The paddles are secured to oscillating lugs at either end, the inner ends of the lugs are made wide enough and of proper thickness to form a lever and bearing surface nearly at right angles to the paddle, and made to actuate the paddle through the agency of a peculiarly shaped plate, and compound pawl lever and locking device, by an operating foot and strongly secured stud, which works in a fixed cam, and causes the pawl to oscillate upon a fixed bolt, so that as the wheel rotates the studs cause the pawl to move and force the operating foot against the lever end of the lugs and push the lug with its paddle from a tangential to a radial position.

203087. Thomas A. Swinburne, Torquay, England. "Improvements in anchors." This invention consists in an anchor composed of a shank, capable of being reversed end for end, and flukes and stock secured detachably thereto, whereby it is rendered more portable and, in case of breakage or undue wear, provision is afforded for replacing them by others, to render it susceptible for further use.

GERMAN EMPIRE.

1815. G. O. Topham, London. "A gimbal-suspension of seats, couches, and berths, for the prevention of sea-sickness."

ITALY.

T. de Zubois, Vienna. "A swimming apparatus for horses."

A. P. Sharp and T. Smith, London. "A life-apparatus for boats, comprising an apparatus for converting sea water into drinkable water."

The Paris Maritime Forges and Railway Co. "Manufacturing armour plates of steel."

O. T. Ridley, Southampton. "Improvements in the construction of ironclads, and in armour-plates or bars, applicable to land, river, and harbour defences."

J. C. A. Thompson. "Improvements in the processes and ap-

paratus for maintaining and steadying berths, frames, &c., on board ships."

J. J. Kunstädter, London. "Improvements in propelling and steering vessels."

S. Biotti and S. Crespi, Intra. "A screw-boat worked by the feet."

C. Dubois, Marseilles. "Chloruretted coal oil and essences for painting ships' bottoms."

H. Baecker, Remscheid. "A screw gear with double action."

G. O. Topham, London. "Improvements in the suspension of seats and berths of vessels, for preventing sea-sickness."

F. W. Brewster, London. "Improvements in the construction of war-vessels, and in securing armour plates on such or other vessels and on fortifications."

A. Cozza, Orvieto. "An oscillatory propeller."

BELGIUM.

45050. A. Conti de Barbaran. "A helicoidal ship propeller or screw coverings, with inclined surfaces, and a propelling reaction."

BOARD OF TRADE.—The Right Hon. Viscount Sandon, M.P. for Liverpool, has been appointed President of the Board of Trade. A slight on the Mercantile Marine has been condoned, for the President is now a Cabinet Minister. The Hon. Mr. Talbot, M.P. for Oxford, takes the Parliamentary Secretaryship, in the place of the Hon. E. Stanhope, who has gone to the India Office. Mr. Farrer remains as the Permanent Secretary of the whole Board, and Mr. Thomas Gray as the Board's Assistant-Secretary, having charge of the Marine Department, and Mr. C. Cecil Trevor having charge of the Harbour Department, which really is also marine in character. Mr. G. J. Swanston is now Junior Assistant-Secretary for Marine, Mr. Allen Stoneham is Financial Assistant-Secretary to the Board, Mr. Jackson, formerly Book-keeper, is Registrar General of Seamen, and Mr. R. G. C. Hamilton has been appointed Accountant-General of the Navy.

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
153	ENGLAND—South Coast—Off Folkestone	Light-vessel to mark wreck.
154	NORTH SEA—Jade River—Wangeroog Island	Alteration in light, and colour of lighthouse.
155	DENMARK—Kattegat—Skaw Spit	New light-vessel and fog-signal.
156	BALTIC ENTRANCE—Sound—Malmö	New beacon and harbour light.
157	BALTIC—Cadet Channel—Giedser Reef	Alteration of light.
158	NORWAY—South Coast—Gronningen Island, Christiansund Fiord	Proposed new light.
159	" " Søndre Katland	Proposed new light.
160	WHITE SEA—Coast of Zimni	Proposed new light.
161	SPAIN—North Coast—Cape Higuera	Light extinguished from May to Nov.
162	ADRIATIC—Zaglava Rock and Gruizza Island	Proposed alterations carried out.
163	" Orebiccio	Light altered in colour.
164	BLACK SEA—Yniada Road—Cape Kuri	Light re-exhibited.
165	AFRICA—Cape Colony—South Coast—Seal Point (Cape St. Francis)	New light.
166	CHINA—East Coast—River Min Approaches	Position of sunken dangers.
167	JAPAN—Nipon Island—Siwo-Misaka	New light.
168	AUSTRALIA—West Coast—Champion Bay—Moore Point	Two new lights.
169	NEW ZEALAND—North Island—Bay of Islands—Port Russel—(Kororarika)	New harbour light.
170	" Middle Island—Oamaru	Light altered in colour.
171	" " — Cape Wanbrow	Light altered in colour.
172	" " —Moerangi Peninsula	New light.
173	SOUTH AMERICA—Dutch Guiana—Surnam River	Particulars of light.
174	WEST INDIES—Barbadoes—Bridgetown	New harbour light.
175	" St. Vincent—Kingstown Bay	Mall-steamers light permanent.
176	UNITED STATES—Oregon—Columbia River	New automatic signal-buoy.
177	" —Gulf of Mexico—Ship Island	Light altered in colour.
178	" —Florida—Fowey Rocks—Florida Reefs	New light and discontinuance of old light
179	NOVA SCOTIA—Sable Island	Fog-signal discontinued.
180	NEWFOUNDLAND—St. John's Harbour, Cape Spear	New fog-signal.
181	CANADA—Gulf of St. Lawrence—Cape Jourimain	Alteration of light.

NAUTICAL NOTICES.

153.—ENGLAND.—*South Coast.*—*Light-Vessel marking Wreck off Folkestone.*—Two lights are now exhibited from a light-vessel placed $\frac{3}{4}$ of a cable south-east of the wreck of the Imperial German

ironclad *Grosser Kurfürst*. They are fixed white lights, placed horizontally about 28 feet apart, and elevated 20 feet above the sea. A riding light is also shown. The light-vessel, painted red, with the word *Wreck* on her sides, is moored in 13 fathoms at low water spring tides, with the following bearings, &c., viz.: East extreme of Folkestone custom house, N.E. $\frac{1}{2}$ N.; the keep of Dover castle in line with Shakespeare cliff summit, N.E. by E. $\frac{1}{2}$ E.; Dungeness lighthouse, W.S.W., distant 9 miles. Position, lat. $51^{\circ} 0' 40''$ N., long. $1^{\circ} 9' E$. Variation, $18\frac{1}{4}^{\circ} W$. in 1878.

154.—NORTH SEA.—*Jade River*.—*Alteration in Wangeroog Island Light*.—The following alteration has been made: The light is a revolving white light, with intervals of one minute (instead of two minutes as previously); the duration of the light is from twelve to fifteen seconds, that of darkness from forty-five to forty-eight seconds. Also, the lighthouse is painted red, instead of white as formerly.

155.—DENMARK.—*Jutland*.—*The Kattegat*.—*Light-Vessel and Fog-Signal at Skaw Spit*.—With reference to Notice No. 181, p. 566, since 13th May, 1878, a light has been exhibited from a light-vessel placed at the outer extreme of Skaw spit. It is a revolving red light, giving a flash every half minute, elevated 31 feet above the sea. The light-vessel, painted red with white cross, and the words *Skagens Rev* on her sides, has two masts, with red globe at foremast head, and is moored N. $71^{\circ} E$., distant $8\frac{1}{2}$ miles from Skaw (or Skagen) lighthouse, in 20 fathoms water. Position as given, lat. $57^{\circ} 46' N$., long. $10^{\circ} 43' 20'' E$. A white riding light is also exhibited from the forestay, 6 feet above the rail. This light-vessel, in common with other Danish light-vessels, will be kept at her station throughout the year as long as the navigation is not obstructed by ice. Also, during thick and foggy weather, a powerful siren trumpet, worked by a caloric engine, will give one blast every two minutes.

156.—BALTIC ENTRANCE.—*The Sound*.—*Sweden*.—*Harbour Light at Malmö*.—Towards the end of May a beacon-post 19 feet high, and surmounted by a triangular board, was placed at the extremity of the new West mole of the port of Malmö. During the night a fixed white light is shown from the beacon to indicate

the sunken rocks off the end of the mole, and which should be passed at a prudent distance.

157.—BAL TIC.—*Cadet Channel*.—*Giedser Reef*.—With reference to Notice No. 88, p. 388, the fixed red light of Giedser reef light-vessel has been altered to a *red flash every half minute*.

158.—NORWAY.—*South Coast*.—*Light on Grønningen Island, Christiansand Fiord*.—During the summer it is proposed to establish a *fixed red light* on Grønningen island (ydre Grønningen). Position given, lat. $58^{\circ} 5' 5''$ N., long. $8^{\circ} 5' 40''$ E. Further particulars will be given.

159.—NORWAY.—*South Coast*.—*Light on Søndre (South) Katland*.—During the summer it is proposed to establish a *fixed white and red light* on Søndre Katland island, near Fahrsund channel. Position given, lat. $58^{\circ} 9' 30''$ N., long. $6^{\circ} 50' 30''$ E. Further particulars will be given.

160.—WHITE SEA.—*Proposed Light on the Coast of Zimni, Russia*.—A light will shortly be exhibited from the most prominent point of the coast of Zimni, near Cape Kerets; it will probably be a *white light, flashing every half minute*; elevation 420 feet. The tower is of wood, and octagonal. Position given, lat. $65^{\circ} 27'$ N., long. $39^{\circ} 45'$ E. It may be lighted during the present summer, but further notice will be given.

161.—SPAIN.—*North Coast*.—*Cape Higuera*.—The temporary light on cape Higuera will not be shown from the 1st of May to the 1st of November.

162.—ADRIATIC.—*Zaglava Rock Light, and Gruizza Island Light*.—With reference to Notices 138 and 139, p. 567, the alterations proposed have been carried out.

163.—ADRIATIC.—*Sabbioncello Peninsula*.—*Alteration in Colour of Orebiccio Light*.—The light on the mole head at Orebiccio (Orebic) is now a *fixed green light*, instead of fixed white as formerly, and visible about 5 miles.

164.—BLACK SEA.—*Yniada Road*.—*Temporary Light at Cape Kuri*.—Cape Kuri light, recently discontinued in order to increase its power, is re-exhibited as a *fixed light* pending the restoration of an apparatus that will show, as formerly, a *fixed light varied by flashes every two minutes*. The light is visible 15 miles.

165.—AFRICA.—*Cape Colony.—South Coast.—Light on Seal Point (Cape St. Francis).*—A light-tower has been recently built about 200 to 300 yards within the pitch of a low point (Seal Point) situated $1\frac{1}{2}$ miles westward of cape St. Francis, to be henceforth known as “Cape St. Francis lighthouse.” Probably about the end of June, 1878, a *revolving white light, flashing* at intervals of 20 seconds, will be shown from this tower at an elevation of 118 feet above high water, and visible 16 to 17 miles. The light will command the coast uninterruptedly to the westward, but will be cut off to the eastward by cape St. Francis on the line N. 53° E. (*true*), or would not be visible from the eastward on a bearing more southerly than S. 53° W. (*true*). The tower is a cylindrical stone structure, 91 feet high, with keeper’s dwelling attached at base. Position, lat. $34^{\circ} 22' 30''$ S., long. $24^{\circ} 50' 20''$ E. The nearest existing lights are cape Recife, about 45 miles to eastward; and Mosel bay (cape St. Blaise) about 133 miles to westward.

166.—CHINA.—*East Coast.—Min River Approaches.—Positions of Sunken Dangers.*—The following information relative to sunken dangers in the approaches to Min river, has been received from Captain R. H. Napier, H.M. surveying-vessel *Nassau*:—

1. *Pilot Rock*, hitherto unnamed, but reported as lying East, distant 3 miles from Sea Cat:—This danger, with about one foot over it and breaking at low water spring tides, is a pinnacle rock of small extent, and lies with the following bearings, viz.:—Changchi island peak, N. 17° W.; Sea Cat, S. 87° W., distant $8\frac{1}{2}$ miles; Sea Dog, S. 63° W.

2. *Norman Court Rocks*, reported by the ship *Norman Court*, as lying 5 cables southward of Flat rock:—These dangers consist of two pinnacle rocks lying north and south from each other, distant $1\frac{1}{2}$ cables. The northern pinnacle has 6 feet over it at low water spring tides. The southern pinnacle has 9 feet over it at low water spring tides, and lies with the following bearings, viz.:—Flat rock, N. 7° W., distant $4\frac{1}{2}$ cables; Matsou island peak, N. 69° W.; Sea Dog, S. 5° W. A rocky ledge with 6 fathoms water over it, extends S.E. by S., $1\frac{1}{2}$ cables from the southern Norman Court rock. A rocky patch of 2 $\frac{1}{2}$ fathoms lies S.S.E. $\frac{1}{4}$ E., distant $2\frac{1}{2}$ cables from Flat rock.

Note.—This foul ground should be carefully avoided when passing the locality.

8. *Ayma Rock*, a sunken danger on which the American barque *Benjamin Ayma* struck in January, 1878, consists of a small rocky patch with 8 feet over it at low water spring tides, and 9 to 10 fathoms (muddy bottom) around at the distance of $1\frac{1}{2}$ cables; it lies with the following bearings, viz.:—*Changechi island peak*, N. 68° E.; *Sea Cat*, S. 71° E.; *Sea Dog*, S. 59° E.; *Middle Dog island lighthouse*, S. 37° E.

Note.—The south extreme of *Changechi island* in line with the north extreme of *Matson island* leads southward of *Ayma rock*. *Crab island* bearing north leads eastward of *Ayma rock*. *Variation*, 1° W. in 1878.

167.—JAPAN.—*Nipon Island*.—*South Coast*.—*Light on Siwo Misaki*.—On 15th April, 1878, a light was exhibited from a lighthouse recently erected on *Siwo Misaki*, the southernmost extreme of *Nipon island*. It is a *fixed white* light, elevated 163 feet above the sea, and visible from seaward through an arc of 218° , or between the bearings of N. 84° W. and S. 46° E., from a distance of 20 miles. The lighthouse, 63 feet high and built of stone, is painted white. Position as given, lat. $33^{\circ} 26' 15''$ N., long. $135^{\circ} 46' 15''$ E. On the exhibition of this light, the light previously shown from the old wooden tower was discontinued, and the building removed. *Variation*, 4° W.

168.—AUSTRALIA.—*West Coast*.—*Champion Bay*.—*Lights on Moore Point*.—On 19th March, 1878, two lights were exhibited from a lighthouse recently erected on *Moore Point*, *Champion Bay*, viz.:—The high light is a *revolving white* light, attaining its greatest brilliancy every *forty seconds*, elevated 110 feet above high water, and visible about 18 miles. The low light is a *fixed red*, visible from the northward through an arc of 28° , or between the bearings of S. 30° W. and S. 58° W. Also visible from the southward through an arc of 28° , or between the bearings of N. 2° W. (on this bearing it leads 2 miles westward of *African reef*) and N. 25° W. The lighthouse, painted white, is a round iron tower, in the form of a truncated cone. Position, lat. $28^{\circ} 46' 50''$ S., long. $114^{\circ} 35' 0''$ E.

169.—NEW ZEALAND.—*North Island.—East Coast.—Bay of Islands.—Harbour Light at Port Russel, Kororarika Bay.*—On 21st December, 1877, a harbour light was exhibited from a lamp post on the extremity of the Government wharf at port Russell (Kororarika), Kororarika bay. It is a *fixed red* light, elevated 20 feet above high water, and visible about 2 miles.

Note.—Good anchorage will be found in Kororarika bay, with Kororarika point bearing North, and port Russel light N.E. by E. $\frac{1}{2}$ E., in $4\frac{1}{2}$ fathoms water. *Variation*, 14° E.

170.—NEW ZEALAND.—*Middle Island.—Alteration in Colour of Oamaru Breakwater Light.*—On 22nd April, 1878, the colour of the light exhibited on the breakwater, Oamaru anchorage, was altered. It is now *fixed green*, instead of fixed red as previously.

Note.—During bad weather, when the danger lights (two white lights horizontal with a red light between them) are shown from the flagstaff, the green light will not be exhibited.

171.—NEW ZEALAND.—*Middle Island.—Alteration in Colour of Cape Wanbrow Light.*—On 22nd April, 1878, the colour of the light exhibited at cape Wanbrow, Oamaru, was altered. It is now a *fixed red* light, instead of fixed white as previously.

172.—NEW ZEALAND.—*Middle Island.—Light on Moerangi Peninsula.*—On 22nd April, 1878, a light was exhibited from a lighthouse recently erected on the south point of Moerangi (Moeraki) peninsula. It is a *fixed white* light, elevated about 170 feet above the sea, and visible 19 miles. The light tower, 28 feet high, is built of wood and painted white. Position approximate, lat. $45^{\circ} 24' 20''$ S., long. $170^{\circ} 53' 30''$ E.

173.—SOUTH AMERICA.—*North Coast.—Dutch Guiana.—Light at Surinam River Entrance.*—The fixed white light exhibited from the light-vessel at Surinam river entrance is elevated 25 feet above the sea, and visible 8 miles.

174.—WEST INDIES.—*Barbadoes.—Carlisle Bay.—Harbour Light at Bridgetown.*—A harbour light is now exhibited from the mole head of the Carénage, Bridgetown. It is a *fixed red* light, visible 4 miles.

175.—WEST INDIES.—*St. Vincent.—Kingstown Bay.—Fort Charlotte Light.*—The light (fixed white) on fort Charlotte, Kings-

town bay, is now exhibited throughout the night, and not only when mail steamers are expected.

176.—UNITED STATES.—*Pacific Coast.*—*Oregon.*—*Signal Buoy at Mouth of Columbia River.*—An automatic signal buoy, painted with alternate white and black perpendicular stripes, and giving blasts of a whistle at short intervals, has been moored off the entrance to the South Channel of the Columbia River, Oregon, in $14\frac{1}{2}$ fathoms of water. Magnetic bearings and distances of prominent objects as follows:—Cape Disappointment light-house, N. by W. $\frac{1}{2}$ W., $7\frac{1}{2}$ miles; Point Adams light-house, N.E. by N., $4\frac{1}{2}$ miles; Outer Bar buoy (12 fathoms), South Channel, N. $\frac{3}{4}$ E., $1\frac{1}{2}$ miles.

177.—UNITED STATES.—*Mississippi.*—*Gulf of Mexico.*—*Alteration in Colour of Ship-Island Light.*—On the 1st of July, 1878, the colour of Ship-Island light, Gulf of Mexico, will be changed from fixed white to fixed red.

178.—UNITED STATES.—*Coast of Florida.*—*Light on Fowey Rocks, Florida Reefs.*—*Cape Florida Light Discontinued.*—On and after June 15th, 1878, a fixed white light was shown from the lighthouse recently erected on the Fowey rocks (northern extremity of Florida reefs), Florida. It illuminates the entire horizon; is 111 feet above the sea level; and is visible about 16 miles. The structure stands in about 5 feet water, and 150 feet south of Beacon P. It is an iron framework, in the form of a truncated pyramid, resting on a pile foundation. The keeper's dwelling is placed about 88 feet above the water, and a cylindrical stairway leads from the dwelling to the lantern. The entire structure is painted dark brown, except the keeper's dwelling and the stair-cylinder, which are painted white. Approximate position, lat. $25^{\circ} 35' 22''$ N.; long. $80^{\circ} 5' 50''$ W. Magnetic bearings and distances of prominent objects:—Cape Florida lighthouse, N.W. $\frac{1}{2}$ N., $5\frac{1}{2}$ nautical miles; Carysfort Reef lighthouse, S. by W., $22\frac{1}{2}$ nautical miles. The light shown from Cape Florida lighthouse is discontinued.

179.—NOVA SCOTIA.—*South-East Coast.*—*Sable Island.*—*Discontinuance of Fog-Signal at West Lighthouse.*—On 1st July, 1878, the steam fog-whistle at the lighthouse on the West end of Sable island will be discontinued until further notice.

180.—NEWFOUNDLAND.—*East Coast.*—*St. John's Harbour.*—*Fog-Signal at Cape Spear.*—A fog-signal is now established at Cape Spear, approach to St. John's harbour. The trumpet, placed in a building on the bill of the Cape, bearing N.N.E. distant nearly 600 yards from the lighthouse, will be worked by compressed air, and during thick weather, fogs, and snow storms, will give a blast of *seven seconds' duration every minute.*

Note.—The range of sound of the fog-signal will probably be from $1\frac{1}{2}$ to 10 miles, according to the direction and force of the wind, or other atmospheric disturbances.

181.—CANADA.—*Gulf of St. Lawrence.*—*Northumberland Strait.*—*Alteration in Character of Cape Jourimain Light.*—On 15th June, 1878, the following alteration was made in the character of the light exhibited on cape Jourimain, east entrance to Northumberland strait. It is now a *flashing white* light, showing a flash every *ten seconds*, instead of fixed white as formerly; it should be visible from a distance of 14 miles.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDRO-
GRAPHIC OFFICE, ADMIRALTY, 1878.

No. 12.—SOUTH AMERICA PILOT, Part II., Notice 5, dangers in the channels leading from Magellan strait to the gulf of Penas, and on the coast of Chile, 1876 and 1877.

No. 13.—AUSTRALIA DIRECTORY, Vol I., Notice 4, dangers on the south coast of Australia, and in Bass strait; tidal stream in Bass strait, &c., 1876 and 1878.

No. 14.—PERSIAN GULF PILOT, Notice 2, Persian Gulf Entrance; Coote shoal, about 5 miles eastward of Tanb or Tumb island.

OUR OFFICIAL LOG.

INSTRUCTIONS RELATING TO FEES AND EXPENSES IN
RESPECT OF SURVEYS, &c.

As there is reason to fear that some misunderstanding and diversity of practice prevail as to the various fees in connection with surveys, the following memorandum is issued for the guidance of the superintendents and surveyors.

(a.) *Survey of Steamships for Passenger Certificates.*—Fees for this duty are chargeable in accordance with the following scale and regulations:—100 tons and under, £4; over 100 tons and not exceeding 300, £6; over 300 tons and under 900, £8; 900 tons and under 1,200, £10; 1,200 tons and under 1,500, £12; 1,500 tons and under 1,800, £14; 1,800 tons and under 2,100, £16; 2,100 tons and under 2,400, £18; for every additional 300 tons, £2.

Note.—(1.) The foregoing scale is for a certificate for twelve months from the date of the commencement of the survey. (2.) For six months six-twelfths of the fee will be charged, for nine months nine-twelfths, and so on, at the rate of one-twelfth for each month; *but no fee is to be less in amount than three-twelfths.* (3.) In all cases of the survey of a *new* steamship, or of a steamship coming under survey for a passenger certificate for the first time, the full fee for a twelvemonth's certificate has to be paid, notwithstanding that a certificate for twelve months may not be required. The fee paid in accordance with the foregoing scale covers any number of visits that a surveyor may require to make before he is able to grant his declaration, as well as the inspection of the lights and fog-signals, and of the marking of the vessel, which inspection must be made by the surveyor before he can grant his declaration. The fee does not, however, apply to, or include, any inspection of lights, fog-signals, or marking made subsequently to the granting of the declaration (as to which see Divisions *g* and *h*). Except in the case referred to in Div. *c.* *Note*

(4), the above fee does *not* cover any service under the Passengers Acts, or measurement for tonnage (Div. e.), or inspection of crew spaces (Div. f.)

(b.) *Inspection of Drawings of Boilers.*—Tracings of boilers intended for steamers for which passenger certificates are required may be submitted for inspection on payment of a fee of £2 for each set of drawings. In no case, however, is any certificate or declaration to be issued until the full survey fee has been paid, and in no case are tracings to be received unless the surveyor has reason to believe that a passenger certificate will be applied for. When the vessel for which the boilers are intended is ultimately surveyed for, and receives, a passengers certificate, this fee will be considered as a portion of the survey fee for such certificate (Div. a.), and credit will be given for it accordingly. On the fee of £2 being paid the surveyor may proceed as far as witnessing the hydraulic test before any further instalment is paid.

(c.) *Surveys under the Passengers Act.*—The Board of Trade have not thought it necessary to call upon owners to pay the full fees specified in the Schedule to the Merchant Shipping Act, 1873, for this duty, but they have, in exercise of the discretion allowed to them by that Act, determined upon the following scale:—Ordinary survey of the ship and of her equipments, accommodation, distilling apparatus, stores, light, ventilation, sanitary arrangements, and medical stores, £3; special survey, £4; ditto, entailing unusual attention, from £5.

Note.—(1.) It will be noticed that the fee for the ordinary survey includes a survey of the distilling apparatus. Two visits are included in this fee, provided the inspection is made before the vessel leaves the vicinity of the docks. (2.) A special survey is to be deemed to be a survey requiring more than two visits by the officers as above described, or a survey in cases in which from age or any other circumstance there are reasonable grounds for doubting the seaworthiness of the vessel. (3.) The fee for a special survey will usually be £4, but where the case requires unusual attention and occupies an unusual amount of the surveyor's time it will be £5 or upwards, according to the special circumstances of the case and the number of visits made.

(4.) Where a declaration has been granted for a steamship under the Merchant Shipping Acts, the survey under the Passengers Acts will be made on payment of half the usual fee mentioned above. The fee paid in accordance with the above scale covers the inspection of the lights and fog-signals, and the marking of the vessel, made at the time of survey under the Passengers Acts. It does not, however, apply to, or include, any inspection of lights, fog-signals, or marking, made subsequently to such survey, as to which *see* Divisions (g.) and (h.) The above fee does not cover any survey of a steamship for a passenger certificate under the Merchant Shipping Acts (Div. a.), or measurement for tonnage (Div. e.), or inspection of crew spaces (Div. f.)

(d.) *Medical Inspection of Passengers and Crew under Passengers Acts.*—For the medical inspection of passengers and crew under the Passengers Acts, the fee chargeable is at the following rate, viz.:—For every hundred persons, or fraction of a hundred persons, examined, £1. In cases where it is necessary for a *second* medical examination to be made before the clearance certificate is given, a fee at *half the above rate* will be charged for such second examination of persons previously examined.

(e.) *Measurement of Tonnage.*—Fees for this duty are chargeable in accordance with the following scale and regulations:—Under 50 tons, £1; 50 to 100 tons, £1 10s.; 100 to 200 tons, £2; 200 to 500 tons, £3; 500 to 800 tons, £4; 800 to 1,200 tons, £5; 1,200 to 2,000 tons, £6; 2,000 to 3,000 tons, £7; 3,000 to 4,000 tons, £8; 4,000 to 5,000 tons, £9; 5,000 tons and upwards, £10.

Note.—(1.) The fees are to be charged on the *gross* register tonnage of the vessels measured. (2.) In the case of vessels measured under Rule 2 of the “Merchant Shipping Act, 1854,” the fee to be charged will be *one-fourth* of the fee applicable to the case in the above scale; but not less than 10s. is to be charged in any case. When a vessel previously measured under Rule 2 is re-measured under Rule 1, the fee to be charged is to be such as will make up, with the sum previously paid for measurement under Rule 2, the full fee applicable to the case in the above scale. (3.) In the case of *alterations* in a space or spaces on the upper deck or engine-room, the fee to be charged will be *one-fifth* of the fee

in the above scale, according to the tonnage of the vessel; but not less than 10s. is to be charged in any case. A fee of 10s. is to be charged in all cases of *minor* inspections (*e.g.*, alteration of rig, port of registry, description of engines, &c.) of a vessel on re-registry. (4.) In the case of foreign vessels holding "Certificates of British Tonnage" no fee is to be charged if the certificate has been issued within three years; if issued previously, the principal dimensions are to be re-tried, and, if they are found correct, a fee of 10s. only is to be charged. If these dimensions do not, practically, agree with the certificate of tonnage the vessel must be re-measured throughout under Rule 1 or 2, as the case may be, and the proper fees must be charged. Where a copy of the "Certificate of British Tonnage" is required by the owner or master, a fee of 2s. 6d. is to be charged for it. (5.) In cases of the measurement of vessels for special "Suez Canal" or "River Danube" certificates no fee will be charged if the vessel already possesses a British tonnage certificate, but a deposit of £1 must be made to cover any expenses that may be incurred. The balance, if any, will of course be refunded. If the vessel does not possess a British tonnage certificate the full tonnage fee must be paid. (6.) In cases of the measurement of vessels registered before the passing of the Merchant Shipping Act, 1854, a fee at the rate of 7s. 6d. for each transverse section is to be charged. The fee paid in accordance with the above scale covers any number of visits that the surveyor may find it necessary to make before he is able to fill up the formula of tonnage and grant his certificate to enable a vessel to obtain registry. It also covers the inspection of crew spaces and lights and fog-signals if the surveyor is able to make these inspections on the occasion on which the measurement is performed, but not otherwise. For any further visits necessary for the inspection, or completion of inspection, of *crew spaces and lights and fog-signals*, further fees in accordance with the scale below (*Div. f. and g.*) will be charged. The fee for measurement of tonnage also covers inspection of marking if the vessels are about to be registered or re-registered.

(*f.*) *Inspection of Crew Spaces.*—For each visit by a surveyor a fee of 10s. is to be charged. The total amount of fees chargeable

under this heading is not, however, to exceed One pound (£1). When lights and fog-signals are inspected on the same occasion as crew spaces the above fee covers the inspection of the lights and fog-signals. If, however, when the surveyor is able to certify to the crew spaces, further visits for the inspection, or completion of inspection of lights and fog-signals, are found to be necessary, fees in accordance with the scale below (Div. g.) will be charged. The fee for inspection of crew spaces does not cover inspection of marking.

(g.) *Inspection of Lights and Fog-Signals.*—For each visit by a surveyor, either when application for the inspection is made by the owner of a vessel, or when the lights and fog-signals are found to be defective (*viz.*, not in accordance with the regulations for preventing collisions at sea), a fee of 10s. is to be charged. The total amount of fees chargeable under this heading is not, however, to exceed One pound (£1). The first fee of 10s. should be charged when the vessel is placed under detention, or when notice of intended detention for defective lights and fog-signals is given. The fee for inspection of lights does not cover inspection of marking.

(h.) *Inspection of Marking.*—The inspection of the marking of vessels is now an indispensable preliminary to registration, and, in the case of vessels about to be registered or re-registered, is provided for in the fee paid for tonnage admeasurement. It is only where vessels have neglected to comply with the provisions of the Merchant Shipping Act, 1873, or where the marks are not “permanently continued,” or where application is made by the owner, that a fee for this service is chargeable. The fee is 10s. for the Surveyor’s first visit, and is to cover all expenses incurred, except when the service is performed in consequence of an application by the owner, in which case the expenses are to be charged in addition to the fee. On the occasion of each subsequent visit the expenses incurred by the surveyor are to be charged, but no fee. The fee for inspection of marking does not include inspection for any other service.

(i.) *Survey for Change of Name.*—When a surveyor is directed to survey a vessel for seaworthiness, with a view to the change of

her name, fees are to be charged in accordance with the scale for a twelvemonth's passenger certificate under Division (a). A further fee of £2 will be charged before the final form (Form C) authorising the change of name is given up by the owners. The fees do not include any other service whatever.

(j.) *Survey of a Vessel alleged to be Unseaworthy.*—For this duty a fee is chargeable in accordance with the scale for a twelvemonth's passenger certificate under Division (a) above. Such fees will be charged by the Board of Trade when necessary, and are not payable to the Superintendent in advance. Where, upon inspection, vessels prove seaworthy no fee is chargeable. A fee of £2 is chargeable for the survey of vessels detained on account of *over-loading*. When the survey is made by direction of a magistrate or magistrates in any case of alleged unseaworthiness, or otherwise, under the provisions of the "Merchant Shipping Act, 1871," upon the complaint of the crew of a vessel, if the surveyor is one of the Board of Trade Surveyors appointed under the "Merchant Shipping Act, 1854," a fee in accordance with the following scale is to be charged:—For vessels of 1 ton and under 500 tons, £1 10s.; 500 tons and under 750 tons, £2; 750 tons and under 1,000 tons, £2 10s.; 1,000 tons and upwards, £3. If the surveyor is *not* one of the Board of Trade Surveyors appointed under the "Merchant Shipping Act, 1854," but is (1) an officer specially appointed by the Board of Trade for the survey under the section upon which the complaint is made, or (2) an officer appointed for the time being by the court having cognizance of the case, a fee in accordance with the following scale is to be charged:—For vessels of 1 ton and under 500 tons, £3; 500 tons and under 750 tons, £4; 750 tons and under 1,000 tons, £5; 1,000 tons and upwards, £5. The fees do not include any other service whatever.

(k.) *Survey of a Vessel prior to Re-Registry where the British Registry has been previously closed.*—Under the provisions of the "Merchant Shipping Act, 1873," surveyors are required in certain cases specified in the Act to certify to the seaworthiness of vessels whose certificates of British Registry have been previously closed, prior to their obtaining re-registry. For the survey necessary to

enable a surveyor to give this certificate, a fee in accordance with the scale for a twelvemonth's passenger certificate under Div. (a.) above is to be charged. This fee includes the inspection of crew spaces and lights and fog-signals, but does not include measurement for tonnage.

(l.) *Survey of a Vessel before Transfer to a Foreign Flag.*—The fee to be charged in cases of survey before transfer to a foreign flag is a uniform one of £4, inclusive of the surveyor's expenses.

(m.) *Surveyor's Expenses.*—In all cases, with the exception named in Divisions (h. and l.) above, the expenses (travelling expenses, &c.) incurred by surveyors are chargeable in addition to the fees above specified, in accordance with the following regulations:—

Travelling Expenses.—Full and detailed particulars must be given of all expenses incurred, and they must be invariably supported by vouchers, exception being made only in cases of railway fares and cab hire, or in other cases where vouchers cannot be obtained. The places from and to which the different modes of conveyance were taken must in every instance be specified. First class railway fare may be charged by first and second class surveyors, and second class fare by third class surveyors, tapeholders and messengers.

Personal Expenses.—In the case of principal consultative and principal district officers, and surveyors of the first and second classes, £1 may be charged for every day and night of 24 hours, and 10s. for a day of 10 hours or upwards and less than 24 hours. In the case of third class surveyors 15s. (to be reduced to 7s. 6d. after 14 days consecutive absence) may be charged for every day and night of 24 hours, and 7s. 6d. for a day of 10 hours or upwards and less than 24 hours. Tapeholders and messengers are to be paid 6s., 3s. 6d., and 3s. 6d. for the same periods respectively. The foregoing *personal expenses* are only to be claimed in cases where the above-mentioned officers have to proceed to some place out of the limits of their port (as defined by the Customs regulations), and are absent for the time stated; in all other cases the expenses actually and necessarily paid out of pocket for travelling will be repaid, but no allowance will be granted for subsistence. Officers

appointed subsequently to the 11th August, 1877, are entitled to charge only one-third of the day and night allowance as a day allowance for 10 hours, but less than 24 hours.

(n.) *Overtime Fees.*—Whenever surveyors are called upon to perform services out of office hours, application should be made by the owners or their agents to the principal officer of the district, or the senior surveyor of the port, on the Form Surveys 22. The necessary fee, according to the following scale, should then be paid to the superintendent of the Mercantile Marine Office:—On Week Days—From 8 a.m. to 10 a.m., and 4 p.m. to 6 p.m., £1 per hour. From 6 a.m. to 8 a.m., and 6 p.m. to 8 p.m., £2 per hour. Before 6 a.m. and after 8 p.m., £4 per hour. On Sundays, Good Fridays, and Christmas days £4 per hour. A service occupying less than an hour will be charged for as one hour, according to the scale. In services exceeding one hour, a quarter fee will be charged for every quarter or part quarter of an hour, according to the scale. When a Medical Inspector is called upon to perform services out of office hours a special fee of £1 on week days, and £2 on Sundays is to be charged in addition to the fees above-mentioned. This special fee is to cover the whole of the time occupied by the medical inspection. The office hours for the purposes of this circular are from 10 a.m. to 4 p.m. Time spent in travelling is not to be deemed overtime. The surveyors are instructed that they are not in any case to perform overtime work (whether work for which overtime fees have been paid or otherwise) without recording the extent of the time so employed in their diaries; and where fees are chargeable they will also be careful to see that the amount is recorded, in order that, if by any chance it has not already been recovered, the owners may be called upon for payment. If the usual three clear days' notice has been given of the survey or inspection, and the official arrangements have not allowed of the work being done within office hours, no overtime fee is chargeable.

General Remarks.—Except in the cases governed by Div. (j.) all fees must invariably be paid to the superintendent of a Mercantile Marine Office before the surveyor is permitted to proceed with the duty in respect of which they are charged. The payments are in no case to be made to the surveyor himself.

All instructions issued by the Board of Trade with reference to the above surveys and inspections may be obtained from Messrs. Potter, 31, Poultry, E.C., or through any bookseller.—T. H. FARRER, *Secretary*.—THOMAS GRAY, *Assistant-Secretary*.

TO SURVEYORS OF STEAMSHIPS.—BOILER EXPLOSION ON BOARD TUG "SPITFIRE."—"13, Downing Street, Whitehall, 31st March, 1878. —Sir,—I beg to report that, in compliance with your directions, I proceeded to the village of Sonning, near Reading, for the purpose of inspecting the boiler of the s.s. *Spitfire*, which exploded on the 18th inst. The vessel is of the canal type, and has been employed, I believe, almost solely on the upper part of the Thames, carrying cargo and towing barges; she belongs to Mr. Miller, of Battersea, and was built in 1872, and fitted shortly afterwards with engines and boiler by Messrs. Plenty and Son, of Newbury. I found that the explosion arose from the dome being blown completely off the boiler, a rent having taken place at the seam of rivet holes in the lower part of the angle-iron joining it to the shell. The boiler then rent across the top, partly through the seam of rivet-holes at the base of the dome, and partly through the solid plate, and the plates were blown back on each side, tearing away at the angle-irons at the ends of the boiler, except for about one-fourth of the circumference at the bottom, where prevented by the hull. The plates on the port side were blown back, parted from the remainder of the shell at a longitudinal continuous seam of rivets. I carefully examined the boiler, and am satisfied that, at the time of the accident, it was not short of water, and that the explosion could not have arisen from that cause. The boiler was fitted with two safety-valves, 2½ inches diameter, loaded by means of Salter's balances, both valves and connexions being attached to the dome. I found the valves easy in their seats, and consider their combined area ample for the boiler. One of the Salter's balances was lost during the explosion, and has not been found, but the other remained in position, and I was informed by the police-constable at Sonning that, when I saw it, it had not been interfered with since the removal of the dome from the river,

into which it had fallen. I found that it indicated a pressure of 90 lbs. per square inch on the valve to which it was attached. It is noteworthy that the valves could not properly be loaded to more than about 76 lbs. per square inch, a pressure which Messrs. Plenty informed me was formerly still further reduced by a ferrule being placed between the lever and the Salter's balance. In order, however, to obtain the greater pressure of 90 lbs. the end of the lever had been raised by placing a small piece of iron on the top of the valve. Considering that the lesser of the two pressures was more than the boiler should have been worked at, such tampering with the valves cannot be too much condemned. The boiler was of the ordinary multitubular marine type, 4 feet 7 inches diameter, 5 feet 10 inches long, and was fitted with a steam dome 2 feet 6 inches in diameter, and 2 feet 10 inches high. The shell plates of the boiler were $\frac{1}{4}$ inch thick, with the exception of one plate, possibly put in in error, which was $\frac{3}{8}$ thick. The circular seams were single riveted with $\frac{3}{4}$ inch rivet, pitched 1 $\frac{1}{2}$ inches apart, and the longitudinal seams were continuous end to end, and were double lap, riveted with $\frac{3}{4}$ inch rivets pitched 1 $\frac{1}{2}$ inches apart. This latter fact is worthy of comment, the boiler having evidently being double riveted, in order to obtain an increase of strength, but the arrangement of the rivets as close as in single riveting, rendered it little, if at all stronger than if it had been single riveted. The circular shell of the boiler might, I consider, have been worked with safety at a pressure of about 60 lbs. per square inch, or only two-thirds of the pressure at which I found one of the valves loaded. I have already remarked that the boiler was fitted with a steam dome, this was attached to the shell by an angle iron riveted to the base, being also further secured by a couple of stays extending from the shell to a T iron riveted to the top. These stays had the appearance of having given away before the explosion, the jaws having opened out through the pins at the top, being no doubt insufficiently secured. When a boiler is perfectly circular, and not fitted with a steam dome, it has no tendency to change of form; if however, a steam dome be applied, the area of the shell which it covers, having the pressure on both sides, is liable to straighten upon the application

of internal pressure, owing to the strain upon the remainder of the shell, unless the plate is stiffened or supported by suitable stays. When this is not done, or the stays are carried away, the straightening of the plate under the dome, causes an injurious strain at its base at the forward and after ends. The strain being most severe locally, is very dangerous, as a slight fracture is liable to occur, which speedily increases, and results in the dome being blown off. This has been known to take place in steam boilers not worked above the working pressure due to the cylindrical part, and I have no doubt that in this boiler which was worked much in excess of it, the explosion was due to the same cause. Speaking briefly, I consider that the explosion of the boiler of s.s. *Spitfire* arose from the blowing off of the steam dome, occasioned by the boiler having been worked at a dangerous pressure, and the stays in the steam dome having been insufficiently secured.—I have, &c., (Signed) THOMAS J. RICHARDS, the Engineer Surveyor-in-Chief, Board of Trade."

"I think this case strongly supports the general practice of the Board Surveyors, in requiring the shells of boilers under steam domes to be stayed and stiffened; indeed, the necessity for such precaution is now almost universally recognised. I have recommended it for many years, and the explosions on board the steamships *Marcasite* and *Renown* were attributed by the assessors and surveyors on the inquiries to the want of such staying and stiffening. The surveyors should be furnished with a copy of this.—(Signed) THOMAS W. TRAILL.—The Assistant-Secretary Marine Department, Board of Trade.

OFFICIAL INQUIRIES AT HOME, 1878.

(*This List is completed to the 18th of each Month.*)

66. *Union*, ketch, and *Sherburn*, s.s.; the former built at Sutton, 1833; tonnage, 46; London to Blakeney; flour; the latter built at Sunderland, 1866; owned by Mr. T. J. Reay of that place; Sunderland to London; ballast; in collision near the

Mouse lightship, May 1, 1878, when the *Union* was lost. Inquiry held at Sunderland, May 21, 1878, before Rothery, Wreck Commissioner. Powell and Nicolas, N.A. Casualty due to default of master of *Sherburn* for navigating at too great a speed. Certificate suspended for three months.

249. *Frederick Snowden*, s.s. ; built at Middlesboro' in 1866 ; owned by Mr. W. Swanston, of Newcastle ; tonnage, 476 ; Shields to Nieu Dieppe ; coals ; stranded near Calaudsoog, March 21, 1878. Inquiry held at South Shields, April 29, 1878, before Yorke, J.P. Powell and Castle, N.A. Court agreed that the master was not in default and returned his certificate.

260. *Orion*, paddle s. ; built in 1865 ; owned by the General Steam Navigation Company ; tonnage, 777 ; London to Antwerp ; cargo and passengers ; explosion of the starboard boiler, April 7, 1878 ; one life lost. Inquiry held at Westminster, May 6 to 18, 1878, before Rothery, Wreck Commissioner. Ravenhill and Nicolas, N.A. Casualty due to the giving way of one of the plates at the curve in the uptake, which, considering the intense heat to which it was subjected, should have been strengthened by angle irons or otherwise. Court of opinion that from the confined space it was impossible to inspect the boiler.

261. *Olaveaga*, s.s. ; built at Sunderland, 1872 ; owned by Mr. T. Baker, of Cardiff ; tonnage, 412 ; Bilbao to Newport ; iron ore ; stranded on the Cornoc Bras, March 5, 1878. Inquiry held at Cardiff, May 16, 1878, before Jones, Stip. Mag. Aplin and Castle, N.A. Master acquitted of blame. Certificate returned.

261. *Terentia* ; wood ; built at Pallion in 1866 ; owned by G. M. Ken and others, of Glasgow ; tonnage, 345 ; Greenock to Demerara ; coals ; stranded in the Firth of Clyde, April 14, 1878. Inquiry held at Troon, May 3, 1878, before Cowie, Reid, and Guthrie, J.P. Ward and Visconti, N.A. Master in default for not making due allowance for the tides. Certificate suspended for three months.

262. *Dunmore*, s.s. ; built at Barrow-in-Furness in 1877 ; owned by Saint Andrew's Steam Ship Company, Liverpool ; tonnage, 824 ; Nicolaieff to London ; barley ; lost on a rock about five miles S.E. of Ushant. Inquiry held at Liverpool, May

19, 1878, before Raffles, Stip. Mag. Hight and Grant, N.A. Master free from blame. Certificate returned.

265. *Eliza*; wood; built at Prince Edward Island in 1857; owned by Mr. J. Hudson, of Sunderland; tonnage, 244; Stockholm to Sunderland; wood and iron; lost at Whitburn Steel, April 20, 1878. Inquiry held on May 4, 1878, before Yorke, Stip. Mag. Powell and Castle, N.A. Master exonerated from blame. Certificate returned.

266. *Arbutus*, s.s.; built at Glasgow in 1875; owned by Mr. A. A. Laird and others; employed running between Londonderry and Glasgow; tonnage, 336; lost near Cantyre lighthouse, April 17, 1878. Inquiry held at Glasgow, May 11, 1878, before Miller and Watson, J. P. Forster and Jones, N.A. Master exonerated from blame. Court called attention to the dangers of the North Channel, the Cantyre light, the chief one in this dangerous passage, being 297 feet above the sea.

267. *Gem*, wood; built at Perth, 1876; owned by Mr. W. Miller; tonnage, 99; Tyne to Wick; coals; lost at Gowen Point, Kincardineshire, April 20, 1878. Inquiry held at Glasgow, May 14, 1878, before Coulborn and Somerville, J.P. Forster and Jones, N.A. Master guilty of careless and unseamanlike navigation. Certificate suspended for three months.

269. *William Connal*, s.s.; iron; built at Renfrew, in 1862; owned by Messrs. Hutchinson, of Glasgow; tonnage, 459; Glasgow to Bordeaux; pig iron, coal, &c.; stranded on Long Rock, off Ballywater, April 19, 1878. Inquiry held at Glasgow, June 3, 1878, before MacBean and Young, J.P. Ward and Visconti, N.A. Master guilty of careless navigation for remaining below when his presence was required on deck. Certificate suspended for six months.

270. *Achilles*, s.s.; iron; built at Barrow-in-Furness, in 1874; owned by R. Little and others, of Greenock; tonnage, 307; Glasgow to Newry; iron, &c.; lost on Halbert Point, County Down, April 20, 1878. Inquiry held May 18, 1878, before Knox and Robertson, J.P. Forster and Jones, N.A. Master found in default for proceeding to sea with an incorrect compass, and also for continuing at full speed in a dense fog. Certificate suspended for six months.

271. *Seven*, wood ; built at Sunderland, in 1888 ; owned by Mr. W. Baxter, of Whitby, and others ; tonnage, 227 ; Hartlepool to Stockholm ; coals ; lost near Scaw, March 31, 1878. Inquiry held at South Shields, May 11, 1878, before Yorke, Stip. Mag. Powell and Castle, N.A. Master guilty of great negligence. Certificate suspended for six months.

274. *Broughton*, iron ; built at Belfast, in 1868 ; owned by Mr. W. Thomas, of Swansea, and others ; tonnage, 570 ; Liverpool to Buenos Ayres ; iron bars ; stranded on Arklow Bank, April 23, 1878. Inquiry held at Liverpool, May 18, 1878, before Raffles, Stip. Mag. Grant and Wilson, N.A. Master found in default for careless navigation. Certificate suspended for three months.

278. *Scotia*, wood ; built at Prince Edward's Island, in 1874 ; owned by Mr. Howells, of Llanelly ; tonnage, 199 ; Huelva to Runcorn ; ore and coal ; abandoned (having sprung a leak) on the Coast of Spain, April 23, 1878. Inquiry held at Swansea, May 17, 1878, before Fowler, Stip. Mag. Visconti and Hight, N.A. Master not to blame. Certificate returned.

280. *Kenley*, s.s., iron ; built at Sunderland, 1877 ; owned by Mr. F. D. Lambert and others ; tonnage, 421 ; Seaham to Rochester ; coals ; stranded on Whitby rock, May 2, 1878. Inquiry held at Whitby, May 16, 1878, before English and Corner, J.P. Harris and Knox, N.A. Master in default for not paying due attention to the set of the tide. Certificate suspended for three months.

284. *Chicago*, s.s., iron ; built at West Hartlepool, 1878 ; owned by Mr. Wm. Gray and another of that port ; tonnage, 892 ; Newcastle to Boston ; coals ; stranded and lost on the Long Sand, May 8, 1878. Inquiry held at West Hartlepool, May 25, 1878, before Rothery, Wreck Commissioner. Powell and Nicolas, N.A. Master in default in not verifying his position after sighting the Shipwash buoy which he mistook for the Inner Gabbard. Certificate suspended for six months ; recommended for one as mate during that period.

Childwall Hall, s.s. ; built at Glasgow, 1876 ; owned by Mr. J. M. Wood, of Liverpool ; tonnage, 1,361 ; Liverpool to Bombay ; general cargo and 9 passengers ; lost on the coast of Spain, April 10, 1878 ; 15 persons drowned ; master killed through the

rope breaking whilst he was being hauled up the rocks. Court of opinion that the steamer was navigated too near to the land ; that the master did everything in his power to save the lives of those committed to his care, and that had all the crew done their duty, every person on board the ship might have been saved.

OFFICIAL INQUIRIES ABROAD.

Ellen, schooner ; stranded at Tathra, N.S.W. . Inquiry held at Sydney, February 18, 1878. No blame attached to master.

Adela, s.s. ; grounded on a rock near Sandpatch Point, N.S.W. Inquiry held at Sydney, February 18, 1878. Master reprimanded, and cautioned to be more careful in future.

Undine, schooner ; lost at the entrance of the Nambuccra River, N.S.W. Inquiry held at Sydney, N.S.W., February 25, 1878. No blame attributable to master.

Western Star, brig ; lost on Bampton Reef, January 28, 1878. Inquiry held at Brisbane, February 26, 1878. Master not to blame ; considerable credit due to him and the mate for the way in which they navigated their two boats to Queensland, a distance of 550 miles.

Sarah Nicholson, ship ; grounded in Newcastle Harbour, N.S.W., when in charge of a pilot. No one to blame.

Settlers Friend, schooner ; stranded and lost at the entrance of the Tweed River, N.S.W. Inquiry held at Sydney, March, 1878. Master reprimanded and cautioned.

Platypus, s.s. ; stranded whilst entering Richmond River, N.S.W. Inquiry held at Sydney, March 4, 1878. No blame attached to master.

Annie W. Goddard, brigantine ; lost on Riding Rocks, Bahama Islands. Inquiry held at Nassau, March 7, 1878. No blame due to master.

Athole Cran, brigantine ; stranded on the North Rock, Bahama Islands. Inquiry held at Nassau, March 16, 1878. Casualty due to a strong easterly current.

Langkat and *Colonel Phayre*, in collision at sea. Inquiry held at Penang, March 14, 1878. Both masters to blame. Certificates suspended for six and two months respectively.

Octoroon, schooner ; foundered at sea, when on a voyage from Port Macquarie, N.S.W. Inquiry held at Sydney, N.S.W., March 11, 1878. No blame attributable to master.

Concordia, barque ; abandoned at sea. Inquiry held at Valparaiso, March 15, 1878. Master justified in abandoning his vessel. Certificate returned.

J. H. Gillespie, brigantine ; lost near the Dog Rocks, Cay Sal Bank. Inquiry held at Nassau, March 20, 1878. Casualty due to an easterly current ; master not to blame.

Magdala, brigantine ; lost on Cay Sal Bank. Inquiry held at Nassau, March 20, 1878. No blame attached to master.

Assyrian, s.s. ; grounded and lost on the Elphonisi Rocks, Candia. Inquiry held at Malta, April 20, 1876. Master to blame for not making himself acquainted with the locality. Certificate suspended for three months.

Modoc, barque ; lost near San José Ignacio. Naval Court held at Monte Video, May 4, 1878. Master and mate both guilty of careless navigation in thick weather. Certificates suspended for six and three months respectively.

Bengal, s.s. ; stranded on Long Island. Naval Court held at New York, May 3, 1878. Casualty due to negligent navigation on the part of the master. Certificate suspended for six months.

Commodore, s.s., and *Wimbledon*, s.s. ; in collision at the entrance of Yenicallee Channel. Naval court held at Kertch, May 13, 1878. Master of *Commodore* to blame in having an unauthorized pilot on board.

Joseph Pease, s.s., and *Jaruco*, barque ; in collision in the Sea of Malaga. Casualty due to the default of the mate of the *Joseph Pease* for omitting to port his helm in time. Certificate suspended for six months.

Mangrove, s.s., and *Rosa Mary*, s.s. ; in collision off Cape Bon. Inquiry held at Malta, May 15, 1878. Casualty due to the fault of the second mate of the *Rosa Mary* in porting the helm, and to the chief mate of the *Mangrove* for not having starboarded in time. Both masters exonerated from blame. Certificate of second mate of *Rosa Mary* suspended nine months ; that of mate of *Mangrove* for three months.

GENERAL.

BETWEEN TWO FIRES.—The Board of Trade seems just now to be in an unenviable position. On the one hand, the various Plimsoll Committees at the ports are on the alert to represent, through their patron and founder, those cases in which the Board do not take full action; and, on the other hand, an association or combination has been formed to put the curb on the Board where its action, in securing public safety, is deemed by the committee to err on the side of stringency. This state of things, though it may be disagreeable to the Board's officers for a time, and may possibly lead to public danger, by causing undue timidity at headquarters, is one that should be hailed with satisfaction, and as good in the long run, by those who have got to the bottom of this vexed subject. The Legislature will, by means of these cross fires, be brought at last to understand that the only way to ensure safety is to extend and fix personal responsibility; and to give to the public (passengers and seamen) a short and ready means of obtaining compensation for injuries to themselves or loss of relatives, caused by imperfect construction of ships and machinery, or disrepairs. The members of the new Watch Committee are, we learn, Mr. Scott Russell, Mr. Peter Denny, Mr. Bramwell, Mr. J. Field, Mr. G. B. Rennie, Mr. J. Harland, Mr. Chas. Wigram, Mr. H. Laird, and Mr. Samuda; and these gentlemen, we learn, have full authority to take action against the Board in any case which appears to them to require their interference. We must compliment the shipowning body on the competency of their representatives, and we trust that they and the public will not be long in reaping benefit therefrom. Whether the new body is to receive a *locus standi* as a collective number of assessors on courts of survey; or whether they are to be referees in whose hands the Board of Trade are to place the whole question, and thereby share their responsibility with, or shift it on to irresponsible persons; or whether the new body is a sort of free-lance contingent, we do not know; but, however this may be,

the country is all the same indebted to these gentlemen for their public spirited action in placing their ripe experience at the service of the shipowners of the country.

BOARD OF TRADE STEAMER "MIDGE."—A parliamentary paper has just been presented, on the motion of Mr. C. M. Norwood, showing the first cost of the *Midge*, and the cost of her repairs and maintenance, and the number of seamen shipped and discharged by the commander of the vessel. From the return we find that the first cost was £1,460 13s. 11d., and the annual cost of maintenance, £1,668, and the number of seamen shipped by her, 64. Thus for shipping 64 seamen an original outlay of £1,460 has been incurred, and a yearly expenditure of £1,668 has gone. These are the bald facts as disclosed by Mr. Norwood's return, and if the return were to be accepted as containing the whole story of the *Midge*, that is to say, as giving her full work, no one would doubt that the vessel is an unnecessary and costly toy. It is very probable that this is what the mover of the return wishes to demonstrate. But inasmuch as the return only furnishes the information asked for, and as that is imperfect and partial information only, it is not possible from the return presented to form any useful or any sound deduction whatever. The *raison d'être* of the vessel is not that she should simply be a floating shipping office, put on and kept up just for the convenience of the few shipowners who want to ship seamen in the river, but is that she should be prepared to render advice and assistance to masters and crews of homeward-bound ships; that she should co-operate in sending seamen to their homes as soon as possible, and above all that she should put down river crimps. In this she has been completely successful. There are those amongst us who, as so-called "statesmen" and so-called "economists," would reduce everything to a £ s. d. standard of value. These gentlemen would not tolerate the *Midge* while she does not act as a revenue-earning machine, and the good she does would be to their mind exactly represented by the balance of receipt over expenditure. We do not for a moment put Mr. Norwood in this class: and for ourselves we would record

our hope that it may be long before the *Midge* does "pay," in the vulgar sense of the word, for it would show that she will have been diverted from her original and useful purpose to purposes less lofty and less useful. We cannot understand that she was ever meant to be a money-making machine, though we can understand that some shipowners may dislike her now, as she has been the means of giving information as to some outward-bound ships on allegations as to their safety or seaworthiness. Here, again, we wish to say that we make no reference to the hon. member for Hull, to whose honour, be it said, that he has never yet suffered from the detention of a single ship, on any such allegation whatever. Finally, it is a constantly repeated averment by the masters of homeward-bound ships that the improvement in the River Thames, by the absence of crimps, touters, and those low characters who used to board ships, to the detriment of everybody, is gratifying and most marked.

COAST FOG-SIGNALS.—In consequence of the successful employment of sound rockets as fog-signals at Flambro' Head and the Smalls Lighthouse, we believe it is intended to use these rockets at Heligoland and Lundy Island, in the latter case to take the place of an 18-pounder gun fired with a 3 lb. charge of powder.

THE "SHIPPING AND MERCANTILE GAZETTE."—The trustees of the late Sir William Mitchell have sold the *Gazette* to Messrs. Spottiswoode & Co., who are also the printers of Lloyd's List.

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THE OBJECTS AND ADVANTAGES OF CO-OPERATION
AMONG SHIPOWNERS.

ABOUT the division of labour in order to economical production there is not now much disputing. Formerly, however, there was as much contention over that process as there now is about the propriety of some combinations. People forget that these are not new, and by no means confined to the illiterate classes. The legal profession may be cited as restrained by regulations as strict as any trades' union in the country. The unwritten laws by which the clergy and the doctors, the artists and the architects, are kept within the lines of what is considered "professional," operate in the same way. Almost every class of traders has its association, and the degree of organisation serves to follow the need that has been shown for it, as illustrated by the case of the Licensed Victuallers' Association and the Amalgamated Engineers.

It would be an exception to all this trading and professional experience if the carrying trade by sea had furnished no scope for, and shown no advantages in, co-operation. At the same time, it is to be noted that so far the shipowners have not forgotten that combination is not in itself a necessary good, that everything

depends on the wisdom or otherwise of the uses made of the combination, that as it may aid some good, it may also—used unwisely—do much harm. Shipowners have not attempted to settle freights by combination, nor have they attempted to evade the law of supply and demand for tonnage by strikes. Their objects have been more humble and legitimate. I name a few only as a sample.

Bills of lading which had sufficed for the simple maritime transactions of our forefathers, were found inadequate for modern voyages. This led to a great variety of bills of lading being used, and much consequent inconvenience. After much patient and combined effort, the Eastern trades bills of lading were adopted, and their provisions have become very common.

In policies of insurance of ships and steamers there was great diversity; I allude especially to the Mutual Club policies in which steamers and ships are so largely insured. These have been improved, and to a very large extent made uniform. It is very difficult now to get any alteration made unless the conviction of its necessity is such as to secure general adoption.

Charters necessarily vary much; but this year a most important step has been made with the forms in use in the Black Sea grain trades. A large representative committee of merchants, shipowners, and brokers considered the various forms in use, and settled new forms, which have become the basis of all embarking in the trade.

The York-Antwerp rules for the settlement of general average is another illustration of the uses to which the shipowners' combination has been put. The variety of the general average practice in different countries made an effort at uniformity desirable. In this the shipowning societies of London, Liverpool, Hull, and Glasgow have borne an honourable part, and the early adoption of the rules has become probable.

These are all improvements in trade documents and practices sought to be accomplished without any Parliamentary interference. They will not the less be regarded as improvements by those who think the minimum of Parliamentary interference with traders the best.

But we have also used our organisations in the Parliamentary warfare of late years. No trade in this country has been so much worried by legislation, so surveyed, inspected, reported on, &c., &c., as the shipping trade. We are not supposed to do anything in the handling of our vessels without the approval of the Board of Trade. Our masters and engineers must have their certificates; our crews must be engaged at the Board of Trade Shipping Office, on forms provided for the purpose, and in the presence of the Government official.

We cannot even pay our servants the agreed wages without stating an account in the form by law prescribed, and making the payment in the presence of a Government official at the shipping office. I am not acquainted with any other class of labourers in this or any other country whose wage contract is so contracted, nor with any class of employers either in this or any other country whose dealings with labourers are so supervised.

In the above state of facts we were of opinion that the Government had interfered too much, and we naturally deprecated legislation which would have interfered much more. We knew that the facts as to losses and as to any preventive power in legislation would not justify further interference. The Report of the Royal Commission on Unseaworthy Ships had confirmed what we knew only too well, that the chief cause of maritime disaster laid with the crews—not with either the ship, or its equipment, or loading. Of course it would have been possible to reduce the risk of a few ships foundering in very bad weather if all ships had been sent to sea with two-thirds of a cargo instead of fully laden. But as we compete with foreigners who are under no such restriction, such an enactment could have had no other effect than to deeply injure our own shipping, and it was therefore out of the question. Within the question there were the variations—laden, fully-laden, deeply-laden, overladen, and as these were essentially matters of opinion, and varied with the ship, the season, the cargo, and the voyage, we did our best to prevent Parliament enacting any hard and fast line, and I think we acted wisely in doing so. This is a fair sample of what use we made of our combination in Parliament.


With the Board of Trade Department we have often to commu-

licate, sometimes with suggestions, sometimes with remonstrance against that administration of the "letter" of the law which "killeth." It is only fair to say that the very able administrators who preside over the Marine Department always listen to suggestions respectfully made, and that remonstrances shown to be just are seldom without effect.

I submit that such objects as I have now given a brief sample of, are legitimate for any association of trades to aim at; and they show themselves to be so by the simple test that the public share in the advantages they produce. I would be suspicious of any result aimed at by any trading association which did not include some public benefit.

JOHN GLOVER.

THE BRITISH OCCUPATION OF CYPRUS.

N the 4th of June in the present year, as our readers are aware, a treaty was concluded at Constantinople between Her Majesty the Queen of Great Britain and the Sultan of Turkey, the main object of which is to prevent the further advance of Russia in the Asiatic dominions of the Ottoman Porte, but which includes a most important stipulation for the occupation by this country of the Island of Cyprus. In the letter addressed by the Marquis of Salisbury to Sir Austen Layard, on the 30th of May last, in which the outline of the "Convention of Defensive Alliance" between England and Turkey was marked out, the following passage occurs:—"It will be necessary, in order to enable Her Majesty's Government efficiently to execute the engagements now proposed, that they should occupy a position near the coasts of Asia Minor and Syria. The proximity of British officers, and if necessary, British troops, will be the best security that all the objects of the agreement shall be attained. The Island of Cyprus appears to them, in all respects, the most available for this object. Her Majesty's Government do not wish to ask the Sultan

to alienate territory from his sovereignty, or to diminish the receipts which now fall into his treasury. They will, therefore propose, that while the administration and occupation of the island shall be assigned to Her Majesty, the territory shall still continue to be part of the Ottoman Empire, and that the excess of the revenue over the expenditure, whatever it at present may be, shall be paid over annually by the British Government to the Treasury of the Sultan." These are the terms on which Her Majesty's Government have agreed to take over the Island of Cyprus. The position thus acquired is of great importance, politically, strategically, and commercially, and a reference to the history and present condition of the island will not be without interest.

The earliest historic mention we have of Cyprus, connects the island with a settlement of the Phœnicians, that people who commenced earliest and most successfully the work of colonization. To the Phœnicians succeeded in Cyprus the Greeks, who in their turn were successively represented by the Egyptians, Persians, Greeks, and Romans. When the Western Empire fell, Cyprus formed part of the Byzantine Empire. From that sovereignty it was taken by the Saracens. At the close of the Second Crusade, Richard Cœur de Lion landed there with the remnant of his crusading army, took possession of the island, and, it is said, conferred it upon Guy de Lusignan, a brother crusader, in whose descendants it remained until 1480, when it fell to the Venetians, and subsequently to the Turks in 1571, at the close of the memorable struggle which resulted in the downfall of the Venetian Republic.

Since 1571 Cyprus has been a Turkish dependency, administered perhaps neither better nor worse than the other outlying possessions of the Ottoman Empire. The maritime trade which, under the Venetian rule, had flourished, gradually diminished until at the present day it is little more than a local traffic, carried on principally with France, Austria, and Greece. Such trade as is done by Cyprus with this country is worked chiefly by way of Constantinople, Smyrna, Beyrout, and one or two more ports of the Levant. The island is naturally productive; but in modern times the population, half Greeks, have been subjected to the iron rule

of the Turkish pachas, and it need hardly be said that the plunder and extortion by which that rule has been distinguished did not afford much encouragement to the cultivation of the soil. The present principal products of Cyprus are corn, wine, and salt. Some cotton is raised; and it is said the supply, under better administration, might be raised to a considerable amount. The islanders also manufacture silk and cotton fabrics, and Turkey leather of a superior quality. But it is probable that the annual value of the entire trade of the island does not exceed half a million. The extreme length of Cyprus is from 140 to 145 miles, and the average breadth from 30 to 35 miles. The climate is variable, and the chief want of the island is said to be water. This seems somewhat singular, considering the watershed afforded by the range of mountains which traverses Cyprus from west to east, of which range St. Croce, with an elevation of over 6,000 feet, the Olympus of the ancients, forms a striking feature. The principal ports are Larnaca on the southern, and Famagousta on the east coast. The only harbour in the island it is said is the latter, the other ports are open roadsteads. The east and south coast are exposed to the winds which traverse the Syrian, Arabian, and Lybian deserts, which must greatly increase the temperature of the south part of the island during the hot season, but the heaviest sea is that which breaks on the north-west shore. The severity of the weather on the coast of Cyprus is matter of tradition. When Othello, the Moor, was sent by the Venetian Government to fill the post with which Sir Garnet Wolseley has just been entrusted, he was met on his approach to the island by a storm which, according to Shakespeare, "so bang'd the Turks" that they abandoned for the time their attack upon the island. While waiting for the arrival of Othello's ship, Montano, his predecessor in the Government of Cyprus, says—

"Methinks the wind hath spoke aloud at land;
A fuller blast ne'er shook our battlements:
If it hath ruffianed so upon the sea,
What ribs of oak, when mountains melt on them,
Can hold the mortise?"

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For do but stand upon the foaming shore,
The chidden billow seems to pelt the clouds ;
The wind shaken surge with high and monstrous mane,
Seems to cast water on the burning bear,
And quench the guards of the ever fixed pole."

If this description at all fits the weather occasionally experienced on the coast of Cyprus, Her Majesty's ironclads will have a bad time of it endeavouring to hold to their anchors in an open roadstead with a lee shore inside of them. So far as the intentions of the Government with respect to the movements of the fleet are known, Larnaca has been selected as the place of rendezvous for the present, and when the report of Sir Garnet Wolseley is received we shall know what definitive arrangements have been decided upon as regards the British armaments in those waters. It may be that an anchorage may have to be selected at some less exposed place than is to be found on the Island of Cyprus, and Ayas Bay, in the Gulf of Scanderoon has been named as capable of affording the required accommodation. Of the ports of Cyprus, that which may be turned to the best account is Famagousta, but the harbour requires to be dredged. If the British occupation of Cyprus is continued, Famagousta from its situation must rise in commercial importance. It lies, as above stated, on the east coast of the island, and opposite the port of Tripoli on the Syrian shore, from which it is distant some sixty miles. If the Euphrates Valley Railway scheme is revived—of which there is now every probability—Tripoli, from its position, must be the port to which the materials for the construction of the line at this end must be brought, and, when opened, it will be the port to which the traffic from the westward must tend. It is, perhaps, in view of the construction of this line that the occupation of Cyprus acquires its chief importance. It may well be doubted whether that occupation will enable us to control the movements of Russia in Asiatic Turkey ; but the presence of a sufficient force in close proximity to the coast of Syria, will enable us to protect the working of the future railway, and preserve from interruption the new communication with our Indian Empire. A fleet at Cyprus or in the

Gulf of Scanderoon will also be within easy distance of the Dardanelles and of Port Said should British interests require that it should operate in either direction. The political consequences of the occupation cannot yet be realized—the commercial results may be safely anticipated. Trade to a greater or less extent must in these days always follow in the wake of an expedition. Apart from the requirements of the fleet and garrison in Cyprus, the presence of a large British force in a hitherto neglected region will direct general attention to it, and stimulate commercial activity. We may fairly anticipate that under the new administration the trades of Cyprus and of the adjacent Levantine ports will greatly increase, and that new channels will be opened up for commercial enterprise. Cyprus has a history peculiarly her own—dear to the scholar and the man of letters, and not without interest to the student of politics—but the most important event in connexion with the island which the future historian will have to record, will be its transfer in these days to British rule, and the protection of the British flag.

ABSTRACT OF SEA CASUALTIES, 1876-7.

TWO returns of very great importance have recently been published by the Board of Trade. The one is the Annual Statement of the Navigation and Shipping of the United Kingdom for the year 1877, prepared in the Statistical Department, and the other is the Abstract of Sea Casualties for the twelve months ended June, 1877, prepared in the Marine Department.

These volumes are practically the credit and debit accounts of the Mercantile Marine of the British Empire. They have been prepared with great care and ability, and contain tables so comprehensive, that it is difficult to imagine a statistical requirement which they do not anticipate. Our business is at present with the Abstracts of Sea Casualties, but these should be studied by the light of the Navigation and Shipping Returns, and we will there-

fore utilize a few of the figures in the valuable abstract tables which, for the first time, preface the latter volume.

These abstract tables show that, after allowing for wrecks, and for vessels struck off the register from other causes, the number and tonnage of vessels on the register at the close of the year were as follow :—

	SAILING VESSELS.		STEAM VESSELS.		TOTALS.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
United Kingdom	20,538	4,199,999	4,552	2,136,361	25,090	6,336,360
British Possessions.	12,028	1,641,415	1,130	156,062	13,158	1,797,477
Totals	32,566	5,841,414	5,682	2,292,423	38,248	8,133,837

By comparison with the figures for the previous year we discover the enormous increase in one year of 169,259 tons, of which 133,823 tons were contributed by the steamers added to the Register in the United Kingdom alone.

The number and tonnage of British vessels entered and cleared at ports in the United Kingdom were as follow :—

	SAILING.		STEAM.		TOTAL.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
Entered	192,003	18,333,815	116,662	34,803,561	308,665	53,137,376
Cleared	164,427	16,905,108	108,007	31,756,566	272,434	48,661,674

These figures represent an increase in one year of nearly two million tons in the entries, and of nearly one million and three quarter tons in the clearances of British vessels at ports in the United Kingdom. A great proportion of this increase took place in the steam tonnage employed in the coasting trade.

Add to the foregoing figures about 80,000 foreign vessels entered with a tonnage of 9½ millions, and a similar number cleared, besides the constant stream of traffic which passes our coasts without calling, and we can easily imagine how densely thronged are the approaches to our great ports and the narrow seas surrounding our islands, and how greatly such thronging augments the risk of collision, as well as, happily, the chances of rescue from shipwreck.

It is worthy of remark that, whilst there is a great increase in the trade carried on with our ports in British ships, an increase which is by no means abnormal, there is not a corresponding increase in the number and tonnage of foreign vessels employed in the trade with the United Kingdom. On the contrary, there was

a considerable decrease in the entries and clearances of foreign vessels during the past year. It is also curious that, whilst the shipping trade of the United Kingdom is rapidly increasing, the number of hands employed is steadily decreasing. This decrease is probably owing to the development of mechanical substitutes for manual labour; but we trust that shipowners will not permit this laudable economy of labour to degenerate into under-manning. We regret to observe that, whilst the number of foreigners employed in ships belonging to the United Kingdom has increased by nearly 10 per cent. during the last three years, the number of British seamen employed has decreased during the same period by over 5,000, or about 3 per cent.*

The difference between the registered tonnage of the United Kingdom, and the portion actually employed during the year, was 220,722 tons, of which considerably over two-thirds belonged to steamers. Allowing for the large number of vessels which must necessarily be laid up for repairs, and looking to the depression of trade which was so general during the year, the percentage of tonnage which was unemployed, about $3\frac{1}{2}$ per cent., is not so high as might have been expected. We are inclined to attribute this creditable fact to the good feeling and good sense of shipowners, who have chosen to run their ships at low freights, hardly indeed sufficient to cover expenses, and to hope for better times, rather than to lay them up and turn off their hands.

The stupendous Commercial Marine of Great Britain and her dependencies, built up as it has been by the unprotected enterprise of our seafaring countrymen, may well be the pride of Englishmen, and when political economists reckon up the elements of strength and weakness in this country, our Merchant Navy may, as we have observed with satisfaction it has recently done, take a prominent place upon the credit side.

The Abstract of Wrecks for the year ending June, 1877, has been prepared in an entirely new form. We have had occasion to

* The number of foreigners now in the British Mercantile Marine is 11·515 per cent. of the whole number of hands employed, instead of 10·53 per cent.—Ed.

point out defects in the old form of the return, but we are now glad to admit that such defects no longer exist. The pruning-knife has been unsparingly, although judiciously, applied, and the tables have been reconstructed in a practical and business-like manner.

Part I. deals with the actual number and tonnage of British vessels lost and damaged.

Part II. deals with the casualties at home, with a view to ascertaining their causes and remedies.

Part III. deals with casualties abroad, and is similar in its form and object to Part II.

Part IV. deals with loss of life from shipwreck at home and abroad.

Part V. deals with the salvage of life from shipwreck at home and abroad ; and

Part VI. deals with the results of formal inquiries into wrecks and discipline at home and abroad.

There are several valuable appendices, one of which contains full details of every ship included in the return which suffered total loss or met with a casualty involving loss of life. Much space has been economised by the elision of the reports of inquiries which made the last return so bulky.

Before making any comparison between the actual number and tonnage of British ships, and the waste resulting from shipwreck, it is necessary to point out that casualties to fishing vessels and boats, and to all small unregistered vessels, whether under steam or sail, are included in the Wreck Abstract. This is a pity. Fishing vessels and the fishing trade are of great national importance, and deserve special consideration, but they cannot be reckoned as part of the Mercantile Marine, and it is unfair to the latter body that the wrecks and loss of life in the fishing trade should be placed to the account of the Mercantile Marine.

There is a vast number of such vessels at home and in the colonies, and a great many registered vessels besides, which are constantly engaged in the fishing trade; but, as we have no accurate statistics of them, we will simply remind the reader that the figures in the Wreck Abstract deal not only with casualties to all the registered vessels given above, but also to 80,000 fishing vessels

registered in the United Kingdom under the Sea Fisheries Act of 1868, employing a crew of 114,000 hands, to small unregistered trading vessels in the United Kingdom, and to similar fishing and trading vessels of which the number is unknown, but must be very considerable, in the Colonies.

This fact should also be remembered in dealing with the classification of wrecked vessels, as, of course, not one of these small vessels was classed.

WRECKS OF BRITISH VESSELS AT HOME AND ABROAD.

The number of British vessels wrecked at home during the year ending June, 1877, and reported during the same period as having been wrecked abroad, was 1,155, and their tonnage, 291,490. These totals were composed as follows :—

	SAILING.		STEAM.		TOTAL.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
Belonging to United Kingdom	645	164,074	85	54,387	730	218,461
British Possessions Abroad ...	411	70,321	14	2,708	425	73,029
Totals ...	1,056	234,395	99	57,095	1,155	291,490

These numbers bear the following percentage to the actual number of vessels registered in the United Kingdom and colonies respectively :—

BELONGING TO THE UNITED KINGDOM.					BELONGING TO THE COLONIES.			
	Sailing.		Steam.			Sailing.		Steam.
Number ...	3.1	...	1.9	...	...	3.5	...	1.2
Tonnage ...	3.9	...	2.5	...	...	4.3	...	1.7

It must be recollected, in comparing the above percentages, that nearly all the small unregistered fishing vessels, &c., are sailing vessels, and that they help to swell the number of sailing vessels lost.

Altogether, 3,019 of the British vessels in existence, and 3,583 of their tonnage, were lost during the year ending June, 1877.

As regards the size of the vessels lost, we find the following results :—

PERCENTAGES OF VESSELS IN EXISTENCE BETWEEN CERTAIN TONNAGES LOST BY SHIPWRECK.

	50	100	200	300	400	500	1,000	1,500	2,000
Under	to	to	to	to	to	to	to	to	to
50	100	200	300	400	500	1,000	1,500	2,000	3,000
2	2.7	4.25	6.	5	3.98	3.18	3.75	3.5	.89

Although, at first sight, these percentages would indicate that vessels between 100 and 400 tons are most dangerous, it will be found, on reference to the Appendix, that a large proportion of the vessels that foundered were of small tonnage, and that the high percentage attached to brigs, brigantines, and vessels of that class, arose from the large number of such vessels that stranded.

The average tonnage of British registered vessels in existence is for sailing vessels 179, and for steamers, 403; and the average tonnage of vessels wrecked is for sailing vessels 221, and for steamers 576.

These results are very curious, and indicate the description of vessels which should be avoided by the underwriters.

Classification at Lloyd's and in kindred societies does not seem to be the panacea for shipwreck, unseaworthiness, &c., that we have been asked to believe. The number of unclassified vessels lost is of course greater than the number of classed vessels lost; but the tonnage and importance of the shipwrecked vessels which were classed, are far greater than the tonnage and importance of the shipwrecked vessels which were not classed; and this fact is conspicuously apparent in the description of loss in which unseaworthiness might possibly have been a factor. For example, the terrible class of missing vessels contains 118 vessels belonging to the United Kingdom. Of these 118 vessels, 57 were classed in Lloyd's, Liverpool Book, or Bureau Veritas, and 61 were not so classed; but the tonnage of the classed vessels was 30,699, whereas the tonnage of the unclassified vessels was only 7,801. In other words, the missing vessels which were classed were of an average tonnage of 538, whilst the missing vessels, which were not classed, were of an average tonnage of 127. The 61 unclassified missing vessels include about 40 fishing smacks belonging to Yarmouth and Lowestoft, which are supposed to have been lost in the great gales of January, 1877.

Inasmuch, therefore, as the worst class of shipwreck consists almost exclusively of classed vessels, classification can scarcely be considered of any value as a preventative of shipwrecks.

In addition to the 1,155 British vessels which were totally lost the abstract gives particulars of 2,228 serious casualties which

occurred to 2,102 British, and of 4,046 minor casualties which occurred to 3,701 British vessels. The distinction now made between vessels and casualties is most important, and it is to be hoped that the Board of Trade will develop it, so as to show clearly the trades in which repeated casualties principally occur, and the description of vessels which meet with or cause them.

WRECKS AT HOME.

The tables relating to wrecks at home include all casualties happening within an arbitrary line drawn round the British Isles, about ten miles from the most prominent headlands. The total losses which happened within this boundary were 491, showing a decrease of 11 on the number of total losses which occurred in the previous year. This decrease would appear much greater if we were to deduct the extraordinary number of foreign vessels, chiefly Norwegian vessels, wrecked on the N.E. coasts during the great gales of December, 1876. About 35 per cent. of the vessels totally lost by stranding on our coasts during the year were foreign. The number of British vessels wrecked at home (excluding collisions) was 315, and this number was composed of 53 founderingings, 231 strandings, 17 missing vessels, and 14 losses undefined.

Of the 53 vessels that foundered, 43 were in the coasting trade, 4 were bound oversea, and 6 were fishing vessels. Four steamers foundered, of which 3 were in the coasting trade, and 1 bound oversea.

Of the 231 British vessels that stranded, 161, including 17 steamers, were in the coasting trade, 37, including 17 steamers, were bound oversea, and 32 were fishing vessels.

Of the 131 foreign vessels that were lost on our coasts, 124 stranded and 5 foundered; 116 were in the trade with the United Kingdom, and 15 were simply passing our coasts. In our notice of the last published abstract, we directed attention to the large number of foreign vessels wrecked on our coasts. The present abstract shows that the number is much larger in the year 1876-7, and although, as we have pointed out above, the increase is partly owing to the prevalence of storms in January, 1876, it is sufficiently remarkable to provide a good text for a crusade against shipowners by some German or Norwegian humanitarian.

"Other causes," by which we suppose are meant vessels destroyed by fire, vessels which sink after striking against derelict vessels or sunken or floating wreck, contributed 16 (including two foreign vessels) to the number of total losses, of which 10 were coasting, 4 oversea, and 2 fishing vessels.

Missing vessels numbered 17, of which 4 were fishing vessels, but it must be remembered that only missing vessels bound from one port to another in the United Kingdom are included in the Home Tables, and that missing fishing vessels bound seaward beyond the ten-mile limit are not included.

The strandings are not evenly distributed round the coast, the South coast displaying a remarkable immunity from such disasters, only 34 of the 355 total losses from stranding having occurred between the North Foreland and Hartland Point, at the entrance of the Bristol Channel. The coasts bounding the quadrilateral extending from Anglesea and Lambay Island on the South, to Mull of Cantire and Fair Head on the North, present a fruitful harvest of wrecks, 92 total losses by stranding, including the Liverpool steamer *Dakotah*, having occurred in this division. The Scotch coast, both East and West, gives unmistakeable evidence of the severity of the gales which raged over the northern shores of our islands in December, 1876, and January, 1877.

Coal, stone, and metallic ores formed the cargoes of the majority of the vessels that foundered and were missing, but the losses seem to have been impartially distributed in proportion to the extent of the trades, and any suspicion of overloading is qualified by the fact, that vessels in ballast and fishing vessels appear to have contributed their fair proportion. The smallness of the vessels wrecked on our coasts is worthy of remark, as it proves that before calculating the percentages in the first part of this notice, there should be added to the vessels registered under the Merchant Shipping Acts, all the sea-going boats and fishing vessels in the United Kingdom, which, as we have shown above, are a vast number.

Of the 315 British vessels totally lost on our coasts, 208 were under 100 tons, 117 were under 50, and 30 were under 15

tons (and were, of course, unregistered), and only 50 were over 200 tons.

Of the 53 vessels that foundered, we find that 31 had passed 20 years of age, of which two exceeded fourscore.

Of the 17 missing vessels, 5 were over 20 years of age, of which 2 were between 40 and 50, and both of the latter were commanded by their owners.

As regards destructive gales, we find that the commonly accepted notion that westerly gales are most dangerous to shipping, is fallacious. It did indeed appear from previous abstracts, that a greater number of casualties took place during westerly than during easterly gales, but we were reminded that westerly gales were by far the more common. The present abstract gives a table showing the direction and force of gales which caused shipwrecks, from which we find that 136 of the 228 wrecks attributed to stress of weather, were caused by gales ranging from N.E. to S.E., whereas only 41 were caused by gales varying from S.W. to N.W.

Of the 53 British vessels that foundered, 30 arose from "causes connected with the weather," such as gales, fogs, calms, lightning, &c., which are generally described in legal parlance as the "act of God." The act or default of man does not appear to have been so destructive, only 8 of the founderings and 63 of the strandings being attributable to it, of which 17 were owing to default of owners in fitting, repairing, manning, &c., and 54 to inefficiency or neglect on the part of masters, officers, and seamen. The same lamentable proportion holds throughout the serious and minor casualties, the elements taking rank as chief destroyer, but followed too closely by the carelessness and incompetence of seamen.

We have already pointed out that the great increase in the traffic on our coasts tends to render navigation more dangerous. Coasting steamers make rapid voyages. Threading their way amongst sailing ships and innumerable small craft, and trusting to the strength of their ships, to their own knowledge, and to the artificial warnings placed upon the coasts, masters push on through storm and fog in the great race of modern competition. What wonder is it then that ships sometimes collide, or that many a fine

steamer frets herself to pieces on the rocks she would so closely skirt, for the sake of saving a tide. Security is too often sacrificed to speed, as the reports of courts of inquiry only too clearly show. Speed is demanded by this fast moving age; and vessels are patronised and masters are petted who make rapid voyages. In fact, "there is nothing so successful as success;" and it is only upon the unlucky mariner whose ship does not come off without "material" damage, whatever that may mean, that the vials of official wrath, in the shape of courts of inquiry and suspension of certificates, are poured out.

It is greatly to the credit of the officers of the Mercantile Marine, especially those in command of steamers, that collisions on our coasts are not more frequent and disastrous. There were 847 collisions on our coasts, of which only 65 were attended with total loss, 218 with serious damage, and 504 with minor damage.

The loss of property was undoubtedly very great, and the legal proceedings which followed many of the collisions probably expensive, but we are happy to record that no great calamity like the running down of the *Northfleet* or the *Grosser Kurfurst* occurred during the year under notice.

Collisions between British vessels on our coasts numbered 587, between British vessels and foreign vessels 223, and between foreign vessels 37, of which 6 were attended with total loss. The great majority of the collisions attended with total loss and serious damage occurred at night, but it is remarkable that only 43 collisions occurred between steamships, and only 3 of these were attended with total loss, of which two occurred at night and one by day. Two of these collisions between steamships occurred in the Thames and resulted in the sinking of two vessels belonging to the General Steam Navigation Company.

Collisions between sailing vessels under way, and between steamships and sailing vessels under way, contributed the majority of the important collisions. It would be interesting to know how many of the latter were due to the convenient assumption on the part of masters of sailing vessels, that steamers are obliged to keep out of the way no matter how erratic may be their own course.

Of the 65 collisions attended with total loss, 15 were due to bad

look out, 16 to neglect or misapprehension of sailing and steering rules, 12 to error of judgment or want of caution, 2 to want of lights, 2 to foggy weather, 3 to parting cables, &c., and 9 to causes undetermined. The causes of the serious and minor collisions are similar, but show an increasing proportion arising from recklessness and neglect.

WRECKS ABROAD.

The wrecks abroad, especially at sea, are of a much graver character than the wrecks at home. The wrecks at home belong chiefly to the small fry which swarm upon the coast, interspersed with an occasional monster, like a Triton among minnows, that wanders from his element and becomes a wreck upon the coast. The wrecks abroad include the big liners and traders that come to grief upon coasts not so well known or marked as our own, and also that important and awfully mysterious class of missing vessels which disappear, crew, classification, chronometers, charts, boats and all, "like the baseless fabric of a vision," and leave not a trace, not even a shadow like the "Flying Dutchman," to give an inkling of their fate.

We find that 764 British vessels, excluding collisions, were reported during the year ending June 1877, as having been lost elsewhere than on our coasts, of which 356 belonged to the United Kingdom, and 408 to the Colonies. Of these 764 total losses, founderings numbered 135, strandings 433, other causes, including fire, &c., 50, and missing vessels 146. Of the 281 vessels that foundered or were missing, 167, including 16 steamers, belonged to the United Kingdom, and 114, including 1 steamer, belonged to the Colonies. The class of founderings is unusually large, owing apparently to abandoned timber laden vessels being included in it for the first time.

There were also 1,226 serious, and 1,448 minor casualties to British ships abroad. Of these 2,674 partial losses, 536 were strandings which occurred to 361 vessels belonging to the United Kingdom and 175 to Colonial vessels. Of the 764 British vessels wrecked abroad, 319 were wrecked on the coasts of British possessions abroad, 164 on the coasts of foreign countries, and 281

were lost at sea. The great bulk of the serious and minor casualties consisted of damage to masts, rigging, or hull, resulting from stress of weather, and we do not therefore think it necessary to give details here.

In addition to the above, there were 77 casualties to foreign vessels in British possessions abroad, of which 50 were strandings resulting in total loss. Canada, Newfoundland, New Zealand, and New South Wales, are distinguished by the number of wrecks which occurred upon their coasts, but this distinction we fear is inseparable from the growth of trade and Mercantile Marine.

Grain, coal, timber, guano and general cargoes seem to have contributed liberally to founderings, but we observe that, as in the similar class at home, fishing vessels and vessels in ballast contributed a large proportion, about 25 per cent. Over 20 per cent. of the vessels that were lost by stranding were in ballast, and this fact favours the supposition that probably more vessels are lost by improper ballasting than by improper stowage of cargoes or overloading. "Plimsoll's mark" is not an infallible criterion of the capacity of any vessel, but vessels in ballast are not in any way affected by it, and we have known many vessels carrying mud or sand ballast to become unmanageable and drift ashore despite all the efforts of their crews. Underwriters would do well to note this fact.

Fishing and fish-carrying vessels contributed over 30 per cent. of the 146 missing vessels; grain followed with 20 per cent.; coal with 20 per cent.; ballast came next, and so on.

It will probably surprise many to learn that the majority of foundered and missing vessels were comparatively new. Of the 146 missing vessels 29 were under 3 years, 64 under 7 years, and only 18 over 20 years old. Of the 764 total losses abroad, 377 were owing to the action of the elements, and 125 including 37 unseaworthy vessels were owing to the act or default of man. Nineteen of the 135 vessels which foundered were unseaworthy, but, as we have pointed out before, some of these may have been fishing vessels and boats which do not properly belong to the Mercantile Marine.

Spontaneous combustion of coal cargoes seems to be declining

in its effect. We are glad to see that the Board of Trade have recently issued a placard upon the subject, calling attention to the loss of a certain coal-laden vessel, owing to the deliberate disregard of the recommendations of the Royal Commission on spontaneous combustion of coal in ships; but we think that the adoption of effective measures for the safe stowage of coal could best be insured by the united action of underwriters. It is not improbable, however, that self-ignition may be responsible for the disappearance of some of the twenty-one coal-laden vessels which are missing.

Only two vessels are put down as intentionally destroyed, but this is a cause which it is obviously difficult to determine, and the Board of Trade may probably be somewhat under the mark.

The collisions reported as having occurred abroad were 362 in number, of which only 25 were attended with total loss, 113 with serious damage, and 224 with minor damage. Of these 362 collisions, 178 occurred between British vessels, 179 between British and foreign vessels, and five between foreign vessels.

Only six collisions, involving total loss, occurred between steamers, all of which happened at night. Ten collisions, involving total loss, occurred between steamers and sailing vessels.

The tables of causes of collisions abroad are very similar in their results to the tables relating to collisions at home, but the collisions are fewer, owing, of course, to the navigation being less crowded abroad than on our coasts.

- INQUIRIES INTO WRECKS AT HOME AND ABROAD.

Every casualty that occurs to a British ship at home or abroad becomes the subject of investigation. Preliminary inquiries are held in all cases of wreck or casualty on the coasts of the United Kingdom or abroad, when witnesses are found or arrive in the United Kingdom; and these inquiries are held by Officers of Customs and Coastguard, who possess, by virtue of their office, or by special appointment, the powers of inspectors, under the 14th and 15th Sections of the Merchant Shipping Act, 1854, and are consequently empowered to administer oaths and examine witnesses. In the Colonies, preliminary inquiries are held by Harbour Masters, or other port authority, and are similar in nature to the inquiries held

at home. In foreign countries, preliminary inquiries are held by British Consular authorities.

In every case the result is communicated without delay to the Board of Trade, upon whom devolves the duty of seeing that the cause of the casualty has been, or will be, thoroughly investigated.

If the preliminary inquiry has been held by a Consul or Colonial Officer, and the case appears to him to demand further investigation, it is then his duty to take steps to convene a competent Court for the purpose ; but if he is unable to procure sufficient evidence, or, as sometimes happens in small foreign ports, to find the proper constituents of such a Court, he is at once to report to the Board of Trade, furnishing what information he can obtain with a view to facilitate inquiry at home.

The Board of Trade is thus put in possession of the particulars of every casualty to a British ship at home or abroad, and is able to decide whether any public or special interest demands further investigation of the casualty. In nine cases out of ten the preliminary inquiry is found to be sufficient, but in a small minority of cases it is considered desirable to have formal inquiries, although frequently their chief object is to make public in a tangible and instructive form, the information already in the possession of the Department. It is entirely wrong to assume that any casualty or class of casualty escapes investigation, although in many important cases the results are not made public. It is a pity that the Board of Trade cannot see their way to making public the reports of preliminary inquiries. Public inquiry, for instance, is seldom held into the causes of the disappearance of missing vessels, for the obvious reason that a Court could not possibly arrive at a definite conclusion in the absence of any evidence as to the actual fate of the vessel. For this reason, the results of the inquiries held into the disappearance of the *Great Queensland*, *Cairo*, and *Colombo* were unsatisfactory.

It would be curious to know what conclusions the learned Wreck Commissioner would have come to, if he had been called upon to investigate the causes of the supposed loss of the *Strathmore*, which was missing for several months, and afterwards

turned out to have been wrecked on the Crozet Islands ; or of the supposed loss of the *Vermont*, which was given up as lost on the Coast of Burmah, but afterwards arrived safely at Liverpool without having met with any casualty at all ! It would, however, be of great public interest if the information collected by the Board of Trade in regard to missing vessels were made available for reference.

Formal inquiries were held into 327 sea casualties, of which 33 were held before the Wreck Commissioner, and 121 before magistrates at home ; 137 were held in British possessions abroad, and 36 by Naval Courts. Of the 154 inquiries held in the United Kingdom, 21 related to foundering and abandonments, 3 to missing vessels, 109 to strandings, 11 to collisions, 8 to fires and explosion, and 2 to other casualties. Of the 137 inquiries held in British possessions abroad, 10 related to foundering and abandonments, 85 to strandings, 29 to collisions, 6 to fire and explosions, and 7 to other casualties. Of the 36 investigations by Naval Courts, 33 related to strandings, 1 to collision, and 2 to fires and explosions.

Of the 327 formal inquiries held at home and abroad, 204 of the casualties were attributed to the neglect, incompetence, &c., of those on board the vessels, and certificates were consequently suspended in 111 cases. Faulty construction, unseaworthiness, bad stowage, defective equipments, and all kindred causes, were credited with 24, of which 12 were strandings. Stress of weather accounts for 73, fire and other accidents for 9, spontaneous combustion for 4, and in the remaining 13 cases the causes were not elicited.

These formal inquiries are of course held in the most important shipwrecks, and we find from the results that incompetence and negligence of seamen lead the van in the array of disasters ; natural causes come next, whilst the number of casualties attributed to unseaworthiness, &c., is amazingly small, considering the extent of the area over which these inquiries extend, and the tremendous number of ships in the Mercantile Marine. These results are above suspicion. The evidence is taken and the judgment delivered in open court, and the whole proceedings are

open to criticism. How is it, then, that we hear so much of unseaworthiness, which appears to contribute so insignificantly to shipwreck, whilst we hear little or nothing of the incompetence and neglect which causes such a vast waste of property and also of life, as we shall presently show ?

We regret that space will not allow us to complete our analysis of these interesting statistics in this month's number of the Magazine, but the Wreck Abstract having been published in its new and improved form without any introductory remarks, we thought that a more exhaustive notice than usual would be welcome to our readers. We have therefore confined ourselves in the present number to sea casualties and their causes, leaving the consequent peril and loss of human life to be dealt with in a future number. We are bound, however, to remark on the good fortune, increased efficiency, or whatever influence it may have been, that enabled the rocket apparatus to play such a signal part in the salvage of life upon our coasts.

During the ten years ended 1865-6, the rocket apparatus saved upon an average 326 lives per year. During the ten years ended 1875-6, it saved upon an average 856 lives per year ; but during the year under notice it was instrumental in saving 817 persons, which was more than double the average for the twenty preceding years, and nearly three times the number saved in the year 1875-6. These 817 persons may be assumed to have been rescued from almost certain death, as the very nature of the rocket apparatus implies that it is only useful on the most rocky and dangerous coasts, where lifeboats would be useless, and where other means are not available.

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IT IS PEACE.

"Lord Salisbury and myself have brought you back peace, I hope with honour, which may satisfy our Sovereign and tend to the welfare of the Country."—LORD BEACONSFIELD, 16th July, 1878.

"Whether use will be made of this—probably the last—opportunity which has been thus obtained for Turkey by the interposition of the Powers of Europe, and of England in particular, or whether it is to be thrown away, will depend upon the sincerity with which Turkish statesmen now address themselves to the duties of good government and the task of reform."—LORD SALISBURY.

IN a former article, headed "Is it Peace?" we ventured to give our opinion strongly and firmly in the affirmative. It is often not wise to give reasons, but we did so, as at the time we were writing, when few persons believed peace to be possible, we wished our readers to understand the reasonableness of our contention, which was that Russia, who was then holding out against England, would in the end give in and agree to a Congress, and would further agree to submit to it the whole Treaty of San Stefano. We pointed out that, even if such a step were an evil from the Russian point of view, it was certainly the lesser of two evils.

The Congress has met and has dispersed. One thing above all others now stands out pre-eminently, and that is the fact that the English Ministry, whilst fully preparing for war in the event of its being thrust upon us, left no stone unturned in the paramount interests of peace. They were, however, mistrusted by their opponents; and, in disbelief of their most solemn assurances, were repeatedly charged with being bent on dragging the country into war. The position of Ministers throughout has been very similar to that of the master and officers of a merchant ship, surrounded by an anxious and, to a certain extent, a clamorous crew and passengers; the captain and officers, on the one hand, being desirous of keeping off a dangerous lee shore, inhabited by savages, and taking every necessary precaution for safety; and the passengers, on the other hand, looking on every precaution taken

against casualty and for safety, as being evidence that the captain and officers thereby manifested a deliberate desire, and were taking measures to bring about disaster. The passengers, seeing that the captain was getting his lead-line, and his signals of distress, and his boats ready, and was placing extra men to look out for dangers; and ordering his men as to their duties, in the event of the natives plundering the wreck, should it come about, immediately held meetings and passed resolutions that all these proceedings were clear and unmistakeable proofs of deliberate intention to court disaster. What can the captain and officers want a lead-line ready for, unless they are about to take us among dangerous shoals and quicksands? What can they be looking to the boats and signals for, unless they mean to use them? Why can they be taking precautions, and organising and arranging the crew to prevent plunder and assault on the passengers, unless they intend to place us deliberately in the position in which all these things will be absolutely necessary, through the wrong course on which the captain is steering the ship? Better give up the voyage and haul down the flag! or, better still, appoint a captain who does not think all these precautions necessary!! In the imaginary case we have just put, all this may have been urged upon the officers clamorously by the ignorant and unthinking passengers, some of whom may, moreover, have wished to take the place of the captain and officers in the management of the ship. If the ship represent the Ship of State, and the captain and officers represent the Ministers of the State, and the passengers the people individually, and the owners the Government and the people collectively, it would behove the owners to look well into the grounds of the allegations against the competency and honesty of the captain and officers, to weigh the facts and probabilities, so as to be able to place a correct estimate on the charges brought against them. That seems to have been done in the present instance, and, as far as we are able to gather the facts, the Court of Public Opinion—the only Court competent to deal with the case—after having heard the evidence, and having become acquainted with the facts, gives judgment in favour of the captain and officers, and dismisses their accusers with costs.

In our opinion it is not possible to over-rate, indeed it is scarcely possible to realize the great good attained for humanity by the settlement just effected at Berlin. To bring about good is the highest thing a man can set himself to do. We speak of good in its complete and widest sense, as affecting the amelioration of the condition of vast numbers of persons, and as securing freedom, and therefore contributing to the welfare of the greatest numbers. And this is exactly what England has been fortunate enough to lead the way in doing. The happiness of peoples can only be secured by good government. The expression "good government" really includes every necessary to the welfare of the populations; but, in order that our readers may fully go with us in the remarks we are about to make, we wish to explain at the outset, that when we use hereafter the expression "good government," we use it as including a system covering civil and religious equality and liberty, an unfettered press, a permanent civil service, universal secular education, honest administration and commercial freedom; a system under which the civil populations, by their assembled representatives, regulate state expenditure, and completely control the Army and Navy; a system in which the law, as embodying and securing justice, is above priestcraft and attorneycraft, and can control them; a system under which it is impossible for soldiers, or professors and manipulators of creed, canon and dogma, or any class of persons, to become paramount, or in any way to make the law and administration subservient to them. In this country, and wherever the "Union Jack" flies, the law is almost paramount, and its administration is quite pure. The subjects of Her Majesty are therefore, of all the peoples of the world, the fittest to understand, and as a consequence the fittest to promulgate the cause of "good government" all over the world.

There are many settled Governments besides our own, but there are few, if any, that have yet, in the eyes of, and to the understanding of the English-speaking races, reached our standard of "good government." In the United States, for instance, though the Government very nearly approaches ours in some points, there is not commercial freedom, and there is not a permanent Civil

Service ; and, chiefly as a consequence of the latter, there is not purity in the administration of the law.

To the minds of most Englishmen, the Governments of Russia and Turkey do not approach the standard of "good government" in any degree whatever. Indeed, it is difficult for a mind wholly unprejudiced to decide which form of government is further from it than the other. The case may perhaps be stated shortly, and at the same time with accuracy thus : In Russia the administration is not pure, the civil populations are subject to a military caste, the priesthood is supreme, religious toleration does not exist, but, on the contrary, the civil populations are subject to oppression, personal violence and expatriation for non-acceptance of the religion of a despotic church of which the Czar is the head ; and the commercial system of tariffs is very bad. The Government is strong enough to put down any and every ebullition of discontent or of violence on the part of any of its people. Russia pays her creditors.

In Turkey the administration is not pure ; the civil populations are subject to a military caste, civil equality is unknown ; the people, as a body, are subject to indignity and extortion at the hands of the ruling classes, who have had amongst them most flagrant corruption from top to bottom ; there is full religious toleration, but there is not religious equality, and the Government is too weak to ensure anything like a proper administration of justice, or to protect its own peaceful subjects against those of its own subjects who are ruffians. The commercial system is not so prohibitive as that of Russia. Turkey does not pay her creditors.

Russia may be said to comprise a despotism of the Greek Church, by which the professors of all other creeds are treated with intolerance and even cruelty, whilst Turkey may be said to comprise a despotism of the Mohammedan Church, by which the professors of all other creeds are treated with supreme indifference, but were denied civil equality. On the broad question of religious toleration Turkey is far before Russia.

In the case of Turkey, misgovernment and corruption had gone so far that it was patent to all the other European Powers that the system of misrule there ought to be no longer tolerated ; for it was

not only dangerous to Turkey itself but was fraught with danger to the peace of Europe. A radical alteration was necessary throughout the Turkish Empire. The subjects of Turkey, that is to say, the masses of her people, are a very fine race, capable of great things if properly ruled and governed. The great crimes of which Turkey stood convicted were, that her Government was utterly wrecked by corruption, and that full civil rights, and, therefore, security of life and property, were specially withheld from her Christian subjects. As champion of the civil liberty and of the religion of the Christians of Turkey, the Emperor of Russia went to war with the Sultan, proclaiming at the same time in the most solemn manner and on his own kingly word of honour, that no territorial aggrandisement was contemplated. It seems strange and very inconsistent that the Government of the only other pure despotism in Europe should have undertaken a stupendous war, solely for the purpose of securing the civil and religious liberty and equality of dissenters in Turkey; when, at the same time, that liberty and equality are denied to dissenters, and dissenters are liable to punishment within his own dominions; but so it was, nevertheless, and we now behold with unmixed gratitude, the stride that has been made in the cause of good government by this otherwise unjustifiable conflict between the rulers of two empires, in both of which, freedom and equality, as understood by Englishmen, are unknown. The astounding result embraces this other remarkable fact, that religious intolerance and inequality of races, remain in Russia as at the outset of the war whilst abolished everywhere else. It has been said that the object of the Czar in making war on Turkey, was to effect a change of places in the subject race, and was not to insure equality; that is to say, it was to place the Christian of the Greek Church over the Mussulman, Jew, Protestant, and Papist, instead of the then existing state of things whereby the others were below the Mussulman; a mere change in the heads of despotism and intolerance and not an abolition. However this may have been, who is there that can now say that the Czar, in doing what he has done, that is to say, in placing within the power of England the means of extending good government in the east of Europe, has not at the same time

laid the foundations of a similar blessing hereafter for his own subjects? If the action of the Czar shall have effected this, then indeed the sacred name of liberty will be more known than ever, and the peoples subject to her beneficent influences more numerous than the most sanguine well-wishers of the human race could have thought possible in the present generation.

Had it not been for the firm attitude of England, the populations of European Turkey and the country itself, would simply have passed from the sway of one despotic Government and Church, to the sway of a Government more aggressive, and a Church more intolerant. The change would have been temporarily advantageous in one respect, inasmuch as it would have placed the people under a strong government instead of under a weak one; but on the other hand, it would have been destructive in the end, for religious freedom would have ceased to exist amongst them, and the Mohammedan races would have been sacrificed on the battle field in subduing other peoples and races by the stern policy of "blood and iron," or they would have been used up in the Siberian mines as heretics or disloyal subjects.

The case of Turkey in Europe may be stated as follows: By the Treaty of San Stefano, Turkey had surrendered to Russia all of the European Empire, except a tract round Constantinople about 120 miles long, with a mean breadth of 40 miles, and certain outlying places, from communication with which Russia had completely barred Turkey. Turkey was thus to have retained about 500 square miles of territory accessible because around Constantinople, and several hundreds of square miles in various places which she could not possibly reach; and the Treaty also virtually placed the whole populations under the sovereignty of Russia and the survey of the Greek Church. Russia also attained ascendancy everywhere in the Black Sea, and Turkey was bound to pay an indemnity in money (which might be taken out in land) that was absolutely exterminating. The Treaty of Berlin has changed all this, as Lord Salisbury's last despatch explains. His lordship says:—"It has radically changed the disposition of the vast region to which, in the Treaty of San Stefano, the name of Bulgaria is given. Nearly two-thirds of it have been replaced under the direct political and

military rule of the Sultan ; and in this re-transfer are included Thrace and Macedonia, in which the Greek populations affected by that instrument are almost exclusively to be found. Bulgaria, speaking generally, is now confined to the river barrier of the Danube, and consequently has not only ceased to possess any harbour on the Archipelago, but is removed by more than a hundred miles from the neighbourhood of that sea. On the Euxine the important port of Bourgas has been restored to the Government of Turkey, and Bulgaria retains less than half the seaboard originally assigned to it, and possesses no other port except the roadstead of Varna, which can hardly be used for any but commercial purposes. The new Slav State, therefore, is no longer strong—no longer merges in a Slav majority any considerable mass of Greek population, and will certainly not confer upon Russia any preponderating influence over either the political or commercial relations of those seas. The events of the late war must for many years secure to Russia a great authority in this State, which will be assisted by affinity of language and similarity of religion. But the influences under which its institutions were to have been formed, and to have commenced their working, will no longer be specially Russian. The Russian and Ottoman Commissaries, who will supervise the election of the Prince and the selection of a Constitution by the ‘notables,’ will be placed under the authority of the Conference of Ambassadors at Constantinople, acting through a Consular Commission upon the spot ; and the retirement of the Russian army from the province must take place before the period at which the working of the new institutions is to begin. Its administration, therefore, will be framed by others besides a Russian Commissary, and the first working of its institutions will not be commenced under the control of a Russian army. The territorial severance from Constantinople of the provinces left under the Government of the Porte by the extension of Bulgaria to the Ægean, was another of the results which was indicated by the Circular of the 1st of April, as tending to weaken the political strength of the Government of Turkey. The restriction of Bulgaria to the Valley of the Danube has necessarily restored the continuity of the dominions remaining to the Porte. The special

protection which is stipulated for ecclesiastics of the Russian religion and for Russian monasteries on Mount Athos, and the power reserved to the Russian Government of shaping the institutions to be given to the rest of European Turkey, were objected to by Her Majesty's Government as tending to increase the power of the Russian Empire in the countries and on the shores where a Greek population predominates. These exclusive stipulations have been entirely abandoned. The Treaty contains large provisions for securing religious liberty to all persons, natives or foreigners, living within the Ottoman dominions, but no special privileges are created for the members of any single nation. Improved institutions will be given to Thessaly and Epirus, but their form will be determined in the last resort, not by the Government of Russia, but by a European Commission. The pecuniary indemnity, to which many objections were taken by Her Majesty's Government, has been excluded altogether from the Treaty at Berlin. The Congress declined to revise a contract which was no infraction of the Treaty of Paris, and which it was therefore within the competence of two independent Powers to conclude. But declarations were made in Congress and are recorded upon the Protocol which profoundly modify its practical effect. The Russian Plenipotentiaries declared that Russia would not seek to annex territory in satisfaction of the indemnity, and that they would not contend that it should be preferred either to debts guaranteed by other Governments, or to debts in respect to which Turkish revenues had been hypothecated. The English Plenipotentiaries declared that they could not recognise in the indemnity any claim of priority over the debts of any kind which were anterior to it in date. It results from these declarations that Turkey is not internationally bound, and cannot be compelled to pay any portion of the indemnity, until the claims of all the creditors of loans anterior to the war have been paid in full. If the prosperity of Turkey should ever increase to such a height as to satisfy this condition, then the indemnity may be undoubtedly demanded. But in such a contingency it will no longer be a disproportional, or even a heavy burden upon the finances of Turkey. The stipulation must be regarded as one which in its actual form is not contrary to international

law, but of which the performance must, in the nature of things, be postponed to a period infinitely remote. The replacement under Turkish rule of Bourgas and the southern half of the seaboard of Bulgaria on the Euxine, and the strictly commercial character assigned by the treaty to Batoum, have largely obviated the menace to the liberty of the Black Sea which was contained in the original proposals. The retrocession of the district of Bayazid necessarily removes all apprehensions of any obstacle being interposed to arrest the European trade from Trebizond to Persia. So far, the Congress has applied an adequate remedy to all the dangers which, in the judgment of Her Majesty's Government, were threatened by the Treaty of San Stefano."

On the subject of civil and religious liberty, Article 62 of the Treaty of Berlin contains the following express words :—" In no part of the *Ottoman Empire* shall difference of religion be alleged against an individual as a ground for exclusion or incapacity as regards the discharge of civil and political rights, admission to the public service, functions and honours, or the exercise of different professions and industries. All persons shall be admitted, without distinction of religion, to give evidence before the tribunals." Other articles in the Treaty provide similarly for the freedom of the populations of Servia, Bosnia, Herzegovina, and Bulgaria. We trust that we may live sufficiently long to read a second proclamation, that time by Russia, by which the subjects of the Czar may receive equal blessings.

As regards the Anglo-Turkish Treaty, it is, for the present, sufficient for us to say that it has given a sense of relief to the mind of the English Nation, who had come to fear that Russia was gaining too much influence in Asia by being allowed to retain Batoum, Ardahan, and Kars. The nation has for some time felt, without being able accurately to express, that something was necessary to place Great Britain on a proper footing, and to add security to our connections with our Indian Empire; the Anglo-Turkish Treaty has exactly met this.

Before our next number appears we doubt not that trade prospects will have revived, and that public stocks and funds will have risen greatly in value; and at an early moment, the

chief practical evidences "on earth" of "good will to man," viz., Steam and Electricity, will make themselves and their attendant blessings apparent where they are now unknown.

SPEECH DAY ON THE TRAINING-SHIPS FOR STREET ARABS.



NE of the annual aristocratic outings recently took place in connexion with some of these training-ships moored in the Thames, when many distinguished personages went to see and be seen by the boys, and to assist in distributing the prizes won during the year. There are several hundred boys in the ships visited ; their behaviour had been fairly good during the year, and the report of the "Nautical Examiners" spoke favourably as to their efficiency. A member of the aristocracy presented the prizes for "Practical seamanship" (whatever that may be deemed to mean in the case of a town boy on board a stationary ship in a river), and for swimming, good conduct, "steering" with a wheel and compass, &c., &c. Being much interested in these ships, but having been unavoidably absent, we are thrown back on the reports of the meetings contained in the daily newspapers, and from them we find that a gallant Admiral is reported to have expressed an opinion that "no ship in Her Majesty's service could show a better appearance than presented by these boys." It is not quite clear what the Admiral meant by this, if he said it : but it is satisfactory to know that he could not have meant that the boys were not what could be wished, or the ships below the mark. It is comforting to know that this is not the case as regards the ships visited. It certainly was the case in some ships where poor boys were "trained," not very long since. As regards the other statement, imputed to the Admiral, "that no training-ships are likely to send out better sailors, either morally or physically," we accept it as an amiable expression of goodwill towards the boys of the ships visited, and towards the fashionable patrons of those ships. But if it means

that H.M.S. *Britannia*, *Sea Lark*, and other of Her Majesty's ships, are not likely to turn out a body of boys better, either "physically or morally," than those whose unfortunate condition and position compel them to find their way into these "Street Arab Ships," then the sooner the Admiral enforces his views on the Admiralty the better for the British taxpayer. Indeed, His Royal Highness the Prince of Wales is interested, as being the father of two boys in a training-ship. It is obviously foolish—nay, it is criminally wasteful, to keep up Royal Naval training-ships, if a distinguished naval officer assures us they are not likely to turn out better sailors, physically or morally, than ships which cost the British taxpayer nothing, but which, at the same time, provide so much congenial occupation for the wealthy and benevolent. A peer of the realm addressed the boys after the Admiral, but whether they would be able to understand his lordship, and whether, if they did, his lordship would not have been misleading the boys, is an open question. At any rate, it is odd that the boys should have been the audience selected for some of his lordship's remarks. His lordship, for instance, is reported by the papers to have told the boys that "our Mercantile Navy is manned by *more* than two-thirds foreign sailors, who were necessarily imperfect as compared with English ones;" and the reporters also tell us he informed the boys that "he was sorry that shipowners were reverting to the old premium system of obtaining sailors;" and it would appear that his lordship said various other things that had been better said to other persons.

These annual "Boy shows" are, we presume, necessary to keep the case of this class of ship before the public. They are also pleasant means for an outing at little personal outlay, and effective means for advertising. Visitors to the ships and boys, brushed up for these occasions, somehow or other feel that their visit is an incomprehensible and indefinite, yet a comprehensive and emotional personal patronage of Faith, Hope, and Charity.

The objectionable part of the business is, that these outings afford opportunities for gentlemen to utter useless speeches, and sometimes to disseminate error; and the speeches sometimes,

if taken to heart literally, would teach the little boys to regard themselves as specially interesting, worthy, and deserving little men, whose past career and life and present position, entitle them, as of right, to be petted and to receive visits from the great and good, as little fellows to whom the country is under an everlasting obligation for the favour of their having been born in England.

There is a very ridiculous aspect in this, but it is true ; and the danger is, that the boy himself may believe that his adulators mean seriously what they tell him. If he does this he will, following the example of the Bo'sn and crew of H.M.S. "Pinafore," put the substance of the teaching into verse as follows :—

" I might have been a Rooshian,
An ' imperfect ' Swede or Prooshian,
A Dane or dark Sepoy :
And its greatly to my credit,
The noble lord has said it,
I'm a nice and good sea boy.

" I might have been a doctor,
A tailor, peer, or proctor,
A buttons, groom, or sprite,
And it's greatly to my credit
The Admiral has said it,
I'm a Merchant Shipping mite.

" I shall plough the ocean blue,
Best among the good ship's crew,
A bright and shining light :
And my future Captain's credit
Is, he knows my sterling merit,
And I myself have said it,
I've been taught that it is right."

That boys on these training-ships do not, in spite of the prize-giving, and speech-making, and petting, place an undue importance on themselves at sea, is because their future bo'sns have more practical sense than some persons who address the boys. It is, nevertheless, hard on the bo'sns.

We have made the above observations in the interest of the

boys, and not in any way as throwing any ridicule on any persons, for we have not mentioned the names of them or of the ships, nor have we intended to throw any slight on the training-ship movement, which we regard as of the very greatest value to the boys themselves, to the British shipowner, and to the British public. We do not wish in any way to cool the ardour of those truly good, and in every way estimable persons who devote time and money thereto. What we do object to is the tendency to utilise some of these otherwise valuable institutions as raree shows and platforms. Take for instance my lord's last speech to the boys. His lordship is always at home when addressing the humbler classes ashore, and rewarding acts of kindness, and is always trying to do good ; but when his lordship goes out of his way to inform the little Arab sailor boys that "our Mercantile Marine is manned by more than two-thirds of foreign seamen, and that the foreign seamen are necessarily imperfect as compared with English ones ;" when he says this in the face of the fact that there are not twelve per cent. of foreign seamen in the whole British merchant service, and in face of the fact that Danes, Swedes, Norwegians and Germans are infinitely better, more sober, stronger and more accomplished than the run of ordinary British seamen, he does harm to the boys, and places himself in the position of a promulgator of fiction fit only to be ranked with the statement of the gallant admiral as to the "moral and physical" appearance of these boys when compared with those of the picked boys of H.M. training-ships, and with that of a great philanthropist made at the Board of Trade, when he recently attended with the Trades' Union deputation, as reported in the *Shipping and Mercantile Gazette*, that "seamen are still sent to prison *because* they refuse to proceed to sea in unseaworthy ships." The street boys of these training-ships are not so good as a body physically or morally, or in any way, as those on board H.M. training-ships ; and seamen are not sent to prison *because* they refuse to go to sea in unseaworthy ships, but because they commit grave breaches of discipline and acts fraught with danger, in ships proved by impartial surveyors, and to the satisfaction of the Courts to be wholly seaworthy. The Legislature and the aristo-

cracy will never be able to effect much real good for Jack until they first make themselves acquainted with facts, and why should they go out of the way to invent fiction when the facts can be picked up all around them. It is not so much ignorance amongst the seamen, as it is want of knowledge, or inventive genius, or playful fancy in their champions, that places Jack individually and invariably in the wrong position.

Another important lesson to be learnt from these training-ships, is that people who have money, leisure, and benevolence, estimate at their true value the stories which have been assiduously set on foot by "philanthropists" and trades' unionists regarding the dangers and hardships of the British Merchant Service, and the inhuman treatment by shipowners and shipmasters of Mercantile Jack. If the noble lord and others who took part in the annual inspection on which we have been remarking, had believed that the Merchant Service is what the author of "Our Seamen" represented it to be, or anything approaching to it, they could not have dared, as true men and women, to devote their leisure, money, and energy in collecting boys for the sole purpose of sending them into it. It is true that the boys collected by the institutions they patronise are street boys, and that street boys are an intolerable nuisance while they remain in the streets. It is not, however, merely to get them out of the streets, but, as his lordship himself gave us to understand when addressing the boys, it is to put before them an honourable career, and to place in their custody, to a great extent, the honour and welfare of England. Now, if his lordship thought that these boys would get drowned, or be starved, or ill-treated, or get lodged in prison, "because" they would not sail in unseaworthy ships; and if his lordship thought that these circumstances, or any of them, would really come between the boys and their "noble career," and the custody of England's honour, it is not likely that he would do what he does, or that a peeress would give £5,000 and frequent donations to help on the work. No; we distinctly agree with those who say that the sea service is a safe service and a good service; that British Merchant ships comprise the best ships afloat; and that British shipowners are honourable men. The noble lord and his

benevolent associates know this to be true as well as we do ; and they know that the rich and the benevolent cannot do better than to continue to collect fit boys and send them to sea, if they cannot find work for them ashore. Fit boys are to be found in abundance in the streets of the cities of England, but there is a way in which these boys, when new on board a training-ship, may be made unfit for sea and turned into sea-lawyers instead of sailors, and that is by distinguished personages making misleading speeches to them, and treating them otherwise in a way which wholly misleads them on vital points concerning their importance, and their physical, moral, social, and intellectual conditions and prospects.

NOTES GOING WEST.

WE sailors neglect to register much that is interesting and useful to practical science, owing to an impression that the simple facts that come daily under our notice must have been recorded by other observers ; and so they glide by, and learned professors make formulæ from imperfect data, which in many instances are the work of amateurs. This defect has been strongly exemplified in a recent work, whose author has accepted without reservation the height, length, and period of waves in the North Atlantic, as recorded by the late eminent Dr. Scoresby. The philosopher, divine, and seaman rests quietly in his tomb in the most charming of England's watering-places, close to the edge of that ocean whose mysteries he loved to explore ; but were he alive he would hail with pleasure facts recently discovered which would throw light on one of his favourite studies. In questioning the accuracy of the observations of so great an authority, it may be safely asserted that he had no experience of the locality where the height and length of waves are nearly double the amount he gives. The cause of this error is easily explained. The *Royal Charter* came home by the trade winds

route, probably making the Azores, and officers who are acquainted with the various tracks of ships on the Atlantic will acknowledge that, ugly as the waves undoubtedly are on that route, they fail to rival in magnitude those which roll over a portion of the route between the banks of Newfoundland and Cape Clear. The measuring-rod used to gauge the dimensions of the latter is a ship nearly five hundred feet in length, one whose correctness cannot be questioned, and seamen who cross the spot in the White Star or Inman steamers occasionally have an opportunity of testing the figures of the learned Doctor by direct proof, and they will render good service to ocean hydrography by carefully checking them after a long succession of heavy westerly gales. His maximum length of wave is a little over 600 feet, and height 43 feet. The *City of Berlin* is 515 feet overall, and were she steaming end on to such a sea it is evident that her middle body must occasionally be unsupported, in other words, not water borne, and the ends would become submerged until the buoyancy of the central portion picked her up. On the coast the opposite conditions would come into play, and the strongest ship could not sustain without injury the strains caused by waves of such proportions, even if the slopes were arranged on the easiest curve which science could define.

For example, an application of the ordinary formula of moments to a ship under the above conditions will prove this.

Let M = breaking moment.

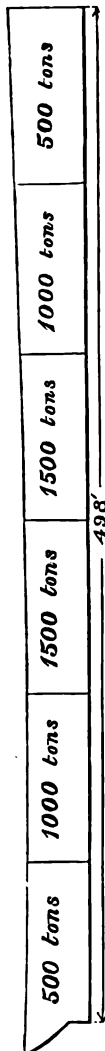
„ W = weight of ship and cargo.

„ G = distance of centre of gravity from either point of support.

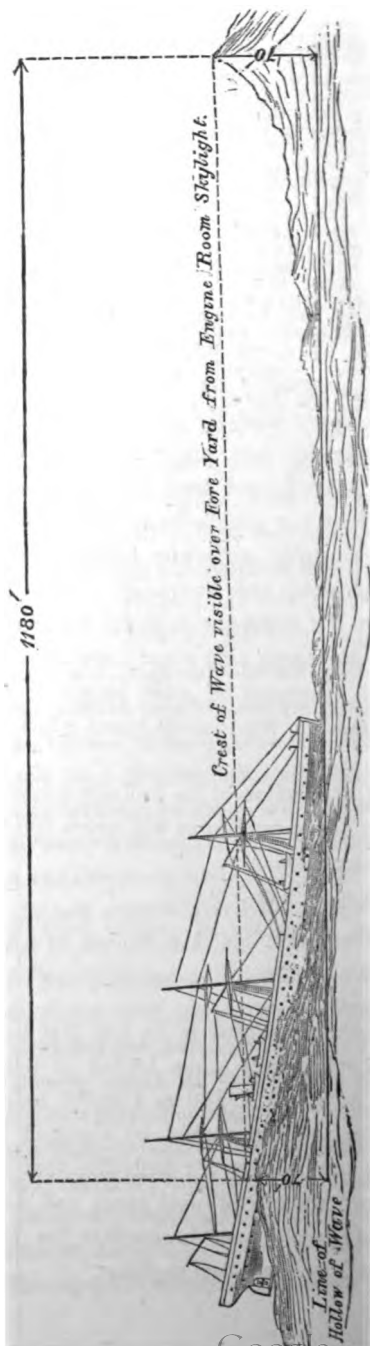
Then $M = \frac{1}{2} W G$.

Suppose the length of the ship to be 498 feet between perpendiculars, with a displacement when loaded of 6,000 tons, then $M = \frac{1}{2} W G = \frac{1}{2} \times 6,000 \times 166 = 498,000$ tons.

Of course such a position cannot be assumed by a ship in a seaway, but there are reasons for believing that when elevated on the crests of two waves, 600 feet apart and 43 in height, it would approach sufficiently near to fracture the strongest cross-section ever designed by the ablest engineer.



No. 1.



No. 2.

It has been stated that the height and distances of the wave crests have been much underrated, but the following description of a hurricane in the Atlantic will at least supply accurate information in one instance.

On January the 2nd, 1875, the White Star steamer *Celtic* left Queenstown for New York, and encountered a constant succession of heavy gales until she reached the latter port. The worst was met in lat. 48° N., long. 40° W., when several of the wave crests showed

over the fore-yard from the engine-room skylight, and were calculated to be 70 ft. in height, and travelling at the rate of 25 knots per hour. From the accompanying sketch (No. 2) it will be seen that their altitude could not be less, owing to the height of the foreyard above the water-line. Neither is it reasonable to suppose that the incline of so large a ship with the horizon was in excess of that indicated in the diagram; but if it were, there is still a large margin to work on, for the wave in question, if reduced to scale, will measure over the assumed figure. Probably no such favourable opportunity ever occurred to make a correct measurement trigonometrically, as the angle of elevation of the foreyard from the engine-room skylight was easily ascertained, thus reducing the possible error to the dip of the keel from the horizon and the estimated distance of the wave a-head of the ship.

The wave accumulation was greater than the oldest seaman had ever noted, and when it is remembered that the gale blew almost without intermission for the six preceding days, the reason is evident. If the wind lulled for an hour or two, the swell had so much momentum that the withdrawal of the pressure made no perceptible difference before another gale commenced.

It says much for the sea-going qualities of the ship that the hull received no damage, although the telegraph on the bridge to the after wheel-house was knocked down by a sea which on its passage aft struck the foreboom so sharply as to break the iron band to which the sheets were attached, although no sail was set at the time.

It would be interesting to learn where, and at what season of the year, the observations of the French savans alluded to by Mr. W. H. White, in his "Manual of Naval Architecture," were made; for their men-of-war are not often found on the northern route in midwinter, and consequently the opportunities of recording data are, with them, probably limited to chance passages where the southern route is adopted. The locality so aptly named "le trou de diable" is studiously avoided by the Brest steamers running to New York, but those from Liverpool and Glasgow steer direct across it; thus the commanders of the latter may render good service to ocean statistics by taking the subject up, many being fully competent for the task.

There is a fact in connection with the genesis of waves in the Atlantic which was mentioned in an article sent to *Nature*, with the hope that savans would endeavour to give an explanation of the cause. It may be remarked in any gale, whatever the force of the wind may be, that those from S.W. never pile up a dangerous sea, but a few hours after a "north-wester" has been blowing with equal force, the difference is seen and felt in an unmistakeable manner. Further, the harshness of the latter tears the surface water up as if a harrow had passed over it. If statistics were compiled showing the loss of boats and other damage to ships, they would prove that in nearly every instance the mischief had been wrought by the north-west sea. It cannot be the fetch, since the winds from the south certainly have as great a range as those from the North. At the time the communication was made, a remark was hazarded that "Cold winds might have a tendency to rise a higher sea than warm." A number of careful observations within the tropics, if compared with others taken beyond the parallel of 45°, might elucidate some interesting facts on this subject.

Since the time of Franklin, who first pointed out to seamen the route by which their passage across the Atlantic might be shortened, but little advance in practical usefulness has been made on the suggestions of the great philosopher. Before his time, the idea of ships bound west attempting to circumvent the set of the Gulf stream by doubling its northern edge, does not appear to have dawned on the minds of navigators, and weeks were often passed in battling against the eastern set of the "ocean river." As time flowed on, and more perfect nautical instruments were invented, the northern and southern boundaries of the warm water were mapped out, and the western passage reduced in consequence.

The recent Admiralty Chart of the Atlantic for 1873 does not indicate correctly the northern limit of this familiar current; from the steady use of the thermometer during three summers, the writer concludes that it is in places laid down 150 miles too far south. West of Newfoundland errors may also be detected, but not to an extent to interfere with the navigator. The presence of the heated water in winter is, near the eastern edge of the banks, during

northerly winds, clearly pointed out at a distance of several miles by the clouds of steam which hang over it, so great is the difference of temperature between the air and sea.

In this same chart the dates for the appearance and the southern limits of field ice, appear to be erroneously laid down, for during the spring of 1874 ships with sails furled and frozen in were passed 27 miles south of the line indicated, and there are good reasons for believing that they drifted many more before they were released. From the deck of one of these vessels a bear and several seals were seen.

Too much stress is laid on the presumed warning given by the thermometer, in regard to the temperature of the water, when approaching the neighbourhood of ice, although its use should always be encouraged as a valuable ally when the danger is suspected. A simple examination of the laws which govern the motion of fluids would do much to dispel this illusion. As a berg drifts south it keeps a small cushion of water around the sides, at a temperature about equal to the freezing point of sea-water. This, from its increased density, sinks, and another warmer film rushes in to supply its place. To within a very short distance the water thermometer is unaffected except in the wake, where for a limited period a sensible difference may be noted. The air, however, is chilled for many miles. This remark is not made for the purpose of impugning the value of the thermometer, but to show the necessity which exists for the utmost watchfulness when the presence of ice is suspected. The exercise of one sense may be justly said to quicken another, and an officer who is anxiously watching the indications given by a thermometer will not neglect more palpable means of detecting the presence of a danger which is second to none in open water, for icebergs are beyond the influence of the Board of Trade, carrying neither sailing lights nor steam-whistles. On a brilliant summer's day they are a grand sight, glowing with prismatic colours, or reflecting the golden sunset clouds on minaret and dome, far outrivalling the exaggerated beauty of Eastern cities. Others, after "calving" (*i.e.*, upsetting), emerge from their somersault not unlike huge masses of soda. In this state they cease to attract admiration, the seawater having wasted them

regularly, smoothed down all traces of fairy-land, and left no projections for the lights and shadows to play on.

Formidable as icebergs really are to the navigator, they, at least in ordinary clear weather, may be seen by day or by night in time to avoid collision, as they reflect light in an uncommon degree, often being visible at a distance greater than the whitest canvas of an American clipper would be.

Field ice is a more formidable enemy, giving no warning beyond a blink of its proximity if the atmosphere be hazy, so that fast ships are occasionally surrounded by outlying lumps before any warning is given. It is probable that the majority of accidents to steamships have been occasioned by these floating reefs, hard and irregular as a sea of agitated lava suddenly cooled. During the last three seasons a more southerly route has been wisely chosen by all the leading lines which certainly eliminates one element of danger from the few now remaining to ocean navigation, enabling a commander to run with confidence, when, under similar circumstances further north, the ominous cry of ice might be heard at any moment.

It would appear as though some great change were going on far north to release the vast number of bergs which have been setting south since the spring of 1874. Previous to that date the ordinary track by Flemish Cap had been for some years deemed safe at most seasons of the year, and no little astonishment was evinced by old hands at finding themselves confronted with an icefield in January, stretching south, and north, and east, beyond the extreme range of vision from the masthead on a clear day. It was first seen a little before daybreak, the moon was at her full, and lit with dazzling brightness the hummocks on either side of the lanes of clear water which ramified in every direction. Occasionally these could be followed for a short distance on the right track, and then the sheets would entirely close in. The grinding noise of an icefield as a steamer cleaves her way through is not a pleasant sound to the uninitiated, and occasionally a heavy thump would remind one that less than an inch of iron stood between him and very disagreeable consequences.

The ice bearing current of Labrador has been so often described,

and, at least theoretically, traced to its source, that no attempt will be made to go over the same ground. But to steamships crossing the Banks of Newfoundland, it offers a ready means for checking the longitude on the eastern edge which should never be lost sight of when the absence of astronomical observations has rendered the position doubtful. The degree of accuracy with which this may be carried out is very remarkable at most seasons of the year. Occasionally towards the close of summer, when the heated waters of the Gulf Stream have surged to their extreme northern limit, and the rays of an August sun have heated the surface to within a fraction of that of the surrounding ocean, the test is too delicate for the ordinary thermometer to form any certain guide. This seldom occurs, except after long calms, for the conducting power of water is so indifferent that the heated layer is only on the surface, and the slightest agitation disturbs the colder stratum. A good test on such occasions may be made by water from the ash cock or the wake.

The western edge is not so well marked owing to the drift from the Gulf of St. Lawrence. Still the change is sufficient to show the mariner when he is to the eastward of the Grand Bank, and, consequently, clear of the region of ice, for rarely are bergs met with there; field ice never. At all times this is a great relief to seamen and passengers, but especially so after crossing the Banks in thick weather with uncertain observations.

There appear to be good reasons for believing that attention to the thermometer would have warned the officer in charge of an Atlantic steamer of his position, and thus prevented her loss on the coast of Nova Scotia, when those on board thought they were in the neighbourhood of George's Shoals. It seems almost incredible that a ship's reckoning should be so loosely kept, but the fact remains that such was the case, and the lesson should not be forgotten.

In a similar manner, when approaching St. George's Shoals from the south or east, the thermometer will give unfailing warning of their proximity by a sudden fall in the temperature of two to four degrees. Once, after some three days of dense fog, the writer took a New York pilot on board, about thirty miles

east of the limits of the south-eastern edge. Under such circumstances, the natural question arose, "What do you make the ship east of George's?" The pilot replied: "We are just sixty miles east, by our soundings." "Impossible, unless our dead reckoning is out." "Well, Captain, I guess it is. Our lead is a pretty good guide in these parts." The thermometer, as the Bank was neared, had been kept going every few minutes. Suddenly, it fell three degrees, and, at the same time, a few light pieces of seaweed floated by. The genus is of no importance, but its presence, unless it be Gulf weed, should, in doubtful positions, attract the suspicions of navigators. In our wisdom, we too often disregard the signs which the old pioneers of the great deep scanned with such marvellous attention, and by their aid paved the way for geographical discoveries so grand that scarcely any now remain to be made. Later on, the Nantucket Lightship was seen, and all doubts as to the correctness of the reckoning cleared up to the satisfaction of the pilot. In acknowledging it, he said, "Captain, that is clever; and when I return to the boat, I will tell our boys I have learned something that will be good for them. It will save us many a heave of the lead on a bitter night."

The position of the eastern edge of the Grand Bank is admirably adapted to preserve intact the normal direction of the current, bending as it does exactly parallel to it for a considerable distance on the eastern side. As is well known, waters of different temperatures or densities mix with reluctance, and in this instance, as on the edge of the Gulf Stream, the line of demarcation is not easily broken through.

By this property, the débris brought down by ice is prevented from spreading over the Banks and rapidly forming shoals, although, in the course of ages, the whole area of shallow water has so been built up.

Occasionally a gigantic berg grounds, and with a clear sky overhead and a heavy swell rolling against the ice cliffs, it is scarcely possible to witness a grander spectacle. Showers of spray are hurled into the air or cascade over the lower portions in sheets of foam, whose play of colour no painter could transfer to canvas,

and no poet could properly describe. After awhile the erosive action of the waves eats out caverns, as they might do on a coast line, and the sea rushes in with a hollow sound, like distant thunder, breaking off huge blocks, or sending splinters in the air which glitter in the sunlight like falling stars on a clear night. As they fall the current drifts them to leeward, forming what, from a distance, appear to be reefs running out beyond some bold islet. In time, the waste by air and heated water acting unequally, destroys the equilibrium, the berg topples over and presents a bald, uninteresting surface for the elements to play on.

The history of the escapes which ships have had from collisions with ice would form an interesting volume, and it is a marvel that accidents have not been of more frequent occurrence, but statistics prove that the loss of life on the route to America is below that of any railway line in the kingdom. The keenest eyesight fails to pierce the dense fog which in the beginning of summer frequently prevails from the western edge of the Labrador current to Sandy Hook. Occasionally, at midday, with a cloudless sky and a brilliant sun overhead, the lookout on the fore-castle cannot be clearly made out from the bridge. A keen glance detects a shapeless figure looming through the mist, but until it moves an unpractised eye could not be sure it was a human figure. It is a great relief to all when the fog, as it sometimes does, rolls up like a gigantic screen, and permits the watcher to ascertain what is around him. Even if it shuts down again, he knows exactly what lies athwart the track, and hope, which seldom deserts a seaman, induces him to believe such weather cannot last. Possibly, during the temporary clearance, a berg or a sail may have been visible in the wake, and the uninitiated marvel how it was passed.

Once the writer was coming home well south, and passing the meridian of the Banks at midnight. The weather throughout the day had been exceptionally clear, and hopes were entertained that the eastern limit of icebergs in this longitude would be passed without encountering fog. Almost without warning a mist spread over the moon, and in a few minutes the ship steamed into a wall of vapour, but from the zenith for several degrees towards the horizon the power of the moon appeared to dissipate it. Suddenly

the officer of the watch raised his glasses in the direction of a white cloud-like patch. As he did so, I said laughingly, "If that is a berg we are in a pit," walked across the bridge, peered into the mist, and, on returning to the other side, found the object had shifted its bearing. Then the fog rolled off, and an iceberg came into the clear, with its pinnacles glistening in the moonlight, and dark shadows falling on the lofty sides. A slight shrug of the shoulders, and the walk was resumed. On the Atlantic it is not wise to be demonstrative.

The adoption of a low southern route during certain months of the year has practically eliminated this source of danger from ocean travelling, but until the managers of the great steam lines made it compulsory, emulation induced men to run risks rather than be surpassed in the race. Although such a course cannot be commended, we must bear in mind that a similar spirit has made England the foremost nation in the world, has carried her through dangers when others have gone down, and has enabled her to stand up alone for the public law of Europe at a critical period in the world's history.

As seamen look at the beautiful and wonderful specimens of naval architecture which carry the red ensign to every quarter of the globe, they feel that the romance of their profession is not wholly lost, and that the consummate skill and contempt of danger which they inherit from their Norse ancestors, is as necessary on a modern Atlantic steamer as it was on board the old-fashioned sailing ship. There are those who assert that the highest class of seamanship is not required for the former, but it is a fallacy. The sailing ship may be kept away or luffed up without inconvenience if taken in a squall; the steamer cannot afford to do either, and judgment must be exercised accordingly.

The tides and currents on the far-famed George's Shoals present no danger to steamers, the northerly set never causing any practical inconvenience. But with sailing ships the greatest vigilance is necessary, the preponderance of drift and set appearing to be decidedly northward. It is a weird place, full of tide rips, breakers, and discoloured water, which in heavy weather occasionally make the navigator hold his breath when he sees the waves

rearing and twisting around each other as if endued with life, or running against the wind with a comb of foam trailing behind them, more dangerous than a heavy regular sea to small deeply-laden coasters. Occasionally they break on board, and suddenly snatch a life, as a man-eating tiger might do from the side of a camp fire in an Indian jungle.

During the winter months the New York pilots carefully avoid cruising in the vicinity; their well-appointed and well-handled little punts are scarcely safe amidst breakers where sand is lodged on the decks of passing vessels from a depth of seven fathoms or more.

The pilots are very careful, trustworthy men, and it was not uncommon to meet their beautiful yacht-like schooners five hundred miles from the land. No weather prevented their attempting to board. It appeared hard to pass them by after they had struggled so far to meet a particular ship, yet the feat often occasioned intense anxiety to those who watched the tiny boat crossing the space which the steamer's length in some wise made a lee. The recent hard times have pressed severely on the means of this popular class, so much indeed, that many have withdrawn from the field unable to make a scanty livelihood by their precarious profession. During the years of fictitious prosperity which preceded the universal crash of 1873, the incomes of many averaged 4,000 dollars or even more per annum, but probably no class in the Union has suffered in an equal degree from the collapse of immigration and its consequent adjuncts in the carrying trade. When the ill-advised prohibitory tariffs which now almost strangle the remote States of the west and south are broken down, and commerce follows its legitimate channels, the New York pilot will, with the greater portion of his countrymen, reap the benefits which a senseless legislation now prevents him from enjoying, and until that time arrives, and come it will, he must be content to struggle on as he best can. In commerce no quarter is shown; the successful man sits down and exultingly contemplates the gains which may have beggared his neighbour. Thus the hard featured grim New Englander forbids his countrymen of the more primitive States to purchase his goods in the cheapest market, in order that the exotic trade raised by himself

may flourish. So long as he can exclude the broadcloths, the woollens, and the hardware of England, he will grow richer and they relatively the poorer. A feeling however is gradually making headway that prohibitive tariffs are slow to increase the national wealth and comfort of the masses, and the world will be a gainer when that feeling is fully developed.

The first glimpse of the western continent on this route is sorely disappointing to the traveller, and must have made the early settlers regret the green fields and wooded slopes of the old country. Nothing meets the eye but ranges of sand hills along the southern shores of Long Island. Nantucket is not in sight, yet seamen speak kindly of it at all times, for they are aware when groping their way amidst the densest fog that the bottom offers for their guidance a book which can be read without fail by an experienced eye. Hence they always speak of it with affection, and recall with pleasure the incidents which have taxed their skill or awakened anxiety.

The Americans are very proud of this feature of their coast, and point disparagingly to the steep headlands of Ireland off which, at no remote distance, the ordinary deep sea lead-line of the merchant service ceases to find bottom. Alike disappointing are the highlands of Navesink, with their bold outline as they rise square across the track, with the grand lighthouses near the summit. On a clear night the high light may be seen dipping at a distance of 28 miles, but it may be doubted if both would not be of more real value to shipping if placed lower down. Here, as elsewhere, the fogs hang heavily over the summits of the hills, when below there may be only a light haze or even clear weather. From this fact and the knowledge that no danger exists beyond two miles of the shore-line, ships, on the whole, would derive benefit from a lower altitude. On the Irish coast this is specially noteworthy, the lower edges of the cliffs on the western side being often distinctly visible when the upper are hidden in an impervious mass of white vapour. Occasionally this hangs so low that only the breakers can be seen foaming at the base, and, should the sun be shining brightly, the effect is very striking to those who witness it for the first time.

W. W. KIDDLE, Commander R.N.

MARITIME LAW.

NOTES ON THREE RECENT CASES.

THREE very interesting and important cases have recently come before the Courts, from which we propose to draw some practical deductions for the benefit of our readers. The first case is that of the steamer *Achilles*, of Barrow, owned by Robert Little, and others, of Greenock; 488 tons gross register; usually employed on the coasting trade between Glasgow, Barrow, and Ireland, carrying iron chiefly. The vessel was without a passenger certificate from the Board of Trade. She had a raised quarter-deck, immediately in front of which was a house extending about 20 feet forward. On the after part of this house there was a steering wheel, and a compass in front of it, which was about two feet from the top of the house and two feet distant from the galley funnel, which was of iron. There was also a steering wheel and a compass at the after end of the vessel. She had at one time a pole compass on board, which was placed at the junction of the quarter-deck and house, and elevated 19 feet above the quarter-deck, but the then captain had it removed from the vessel as being useless. From the time this vessel was built the marine superintendent of the company had found that the compass in front of the wheel on the house had a variable error, sometimes half a point, while at others it amounted to $2\frac{1}{2}$ points. She was swung at Barrow for the adjustment of her compasses in 1874, again in 1875 at Glasgow, and a third time at Barrow in 1876, when it was found this uncertain error continued.

The marine superintendent permitted the master to have the several deviation cards on board the vessel, and to navigate her by whichever he thought proper. It appears that she was navigated by the deviation cards dated 15th December, 1875, although those of 1876 were on board. In March, 1878, Robert Mitchell, who held a certificate of competency, number 101,650, as master of a home-trade passenger ship, became master, when the out-

going master informed him that the steering compass had an uncertain error and was not to be relied upon. In April last, this vessel being at Glasgow, loaded a cargo of about 50 tons of iron, which was stowed in the bottom of the forepart of the main hold, about 80 feet distant from the steering compass. She had also on board about 240 tons of coal and 10 tons of sundries. Being so laden and in good trim, she sailed from Glasgow on April 20th, at 5.15 a.m., bound for Newry, in Ireland, having five passengers and a crew of 16 hands all told, including the master, Robert Mitchell. Nothing of importance occurred until about 1.30 a.m., when the vessel passed Pladda Light, distant one mile. At this time the weather is said to have been pretty clear. Water smooth, with very light wind from S.W. and no sails set, and the vessel was on a course by steering compass of S.W. by S. $\frac{1}{2}$ S. About this time the captain and second mate, who did not hold any certificate, had a consultation about the bridge compass by which they were steering. The second mate thought the compass in more error than usual, and examined round outside the binnacle to see if there was any iron which would attract the compass needle, but he could not find any, and the master then went below, leaving the vessel in charge of a second mate who did not hold any certificate of competency. The captain left orders to be called if required. The vessel was then steering S.W. by S. $\frac{1}{2}$ S. by the bridge compass, which differed from the after compass sometimes during this night one point, and sometimes as much as $2\frac{1}{2}$ points, and she was at full speed, eight knots per hour. At 2.30 a.m. the second mate changed the course to S.W. by S.; at 4 a.m. Corsewall Light was about two points on the port bow, distant about six miles, but no bearing was taken of it. The chief mate then took charge of the watch, and changed the course more southerly while passing Corsewall Light, and the patent log was set. A dense fog set in, and the vessel continued at full speed. At 6.30 a.m. on 20th April, Port Patrick Lighthouse bore W.S.W., distant six or seven miles. Vessel then at full speed, steering S.W. by S. At 6.45 p.m. the fog, which had lifted at 6.30, again became thick. The master, who had been below since 1.30 a.m., returned to the deck, and approved of the courses which had been steered by the mates

in his absence, and continued the S.W. by S. course. At 8 a.m. the fog was very thick, and it is said by the master that she steered S.S.W. $\frac{1}{4}$ W., but the helmsman who was at the wheel at this time was not before the Court to verify this statement. The master estimated that the vessel was then in 70 fathoms water, and would pass 10 miles outside the South Rock Lightship. No lead, however, was used at any time, and the vessel continued on through the fog at full speed. At 8.30 a.m. the look-out man at the bow reported rocks right ahead, and before there was time to give any order she ran on them full speed. She soon filled with water, and was abandoned by the crew and passengers, who landed on Halbert Point, County Down, Ireland, when it was found that the steamer had stranded on Hamilton Rock, off Burial Island, County Down.

After she had stranded it was seen that her head by steering compass was S.W., and by after compass S.W. by S. $\frac{1}{4}$ S., and as she stranded at a speed of eight knots per hour there can be little doubt, if any, that this was the state of her compasses at the time of stranding. The stranding of this vessel is to be attributed to two causes: first, to the fact that her steering compass had been unreliable ever since she was built, and that no serious attempt had ever been made to find the cause or remedy the defect—(one of the owners, who had heard all the evidence, stated that, had he known of the state of affairs, he should have had them put right, and that he considered that the marine superintendent should have done so long ago, in which the Court fully agreed); second, to the fact that, although the master had been warned of the dangerous state of the compass by the former master, he had nevertheless left the deck while the vessel was off Pladda. He admits that he never laid his course on a chart, but simply steered the course that the mates said had been steered on previous voyages, and when the fog came on he neglected to reduce his speed, and heave the lead. Had he done so at 8 a.m. he would have found by the soundings how much his compass was in error, and might even then have avoided the disaster. The Court having carefully considered the evidence adduced in this inquiry, with the charge made against

Robert Mitchell, the master of the *Achilles*, found it proved that this vessel was stranded and materially damaged through the default of the said Robert Mitchell in having proceeded to sea in said vessel, knowing that the steering compass was not to be depended on, and, having this knowledge, he did, in crossing the Irish Channel in a dense fog, fail to reduce the speed of the vessel and take a cast of the lead.

Therefore, for said default, the Court adjudged the certificate of competency as master of a home-trade passenger ship, number 101,650, in favour of the said Robert Mitchell, to be suspended for six calendar months from this date (17th May, 1878). Found that each party should pay his own costs.

The points to be noted here are, that the steamer held no certificate from the Board of Trade; that the compass appears to have been untrustworthy from the first; and that it is very doubtful whether the Board of Trade officers ought not to have detained the ship as "unsafe" within the meaning of the Act of 1876. There can be no doubt that compasses are equipments within the meaning of the Act, and that this vessel was unsafe through defective compasses is proved by the fact that she was stranded therefrom, and very seriously damaged. Had the weather been stormy she might have been lost, and the lives of the passengers sacrificed. It is very well for passengers to travel in steamers that do not possess Board of Trade certificates, and it is possible that they may have an action for damages when they suffer pecuniary loss or personal damage through defects which ought to have been set right; but casualties to ships, arising from defective equipments, will lead the public to be very cautious in the matter. There is another point: the sending of an unsafe ship to sea is in some cases a misdemeanour, and we would strongly advise shipowners not to stand the chance of a prosecution on account of defects in equipments. We think the wording of the clause in the Act is sufficiently wide to make it very difficult for owners to escape, in many cases, if the Board of Trade set the law in motion. We express no opinion on the merits of the present case, but we think, at the same time, that it is of sufficient importance to be taken as a theme

on which to hang advice to owners and their servants, in their own interests, to be as careful to guard against a ship being unsafe as regards her equipments—notably her compasses, chronometers, and charts—as it is to guard against unseaworthiness from defects in the ship or from overloading. The word in the present Act is “unsafe” not “unseaworthy,” and it is obvious that a ship may be “unsafe” from absence of equipments, and still not be unseaworthy—*verbum sap.*

The next case to which we think it necessary to refer is that of the steamer *Sardinian*. She belongs to the Allan line of steamers, and was outward bound to America from Liverpool. She has four decks, and at the bottom of the ship were stowed 400 tons or thereabouts of Welsh coal. The hatch of the bottom deck was open so that gas from the coal could rise into the space between the two decks above. It was confined in the space between these decks by the hatches of the second deck from below being securely fastened down, and there was no ventilation in this space. On the ship calling at an Irish port on her way out, some of the crew took a light into this space, and the result was an explosion attended with loss of life. It is said that the vessel had been passed and cleared by the Assistant Emigration Officer at Liverpool, and this circumstance so much astonished the Wreck Commissioner, that he expressed his views in the form of the following questions to that officer:—

“But do you think it a right thing to allow a ship to go to sea having 405 tons of coal in the lower hold, with no escape for the gas in that lower hold except to the lower between decks: the lower between decks being hermetically sealed; and above, upon the steerage deck, all the steerage passengers to the number of between 800 and 400 being placed?”

“You know that when you cleared this vessel, a wonderfully skilfully contrived explosive machine, she had 405 tons of coal generating gas, which gas was confined in the between decks, and only required a man to go down with a light in order to explode, and send the 460 passengers all into the air! Do you think that that was a wise arrangement? You have told us that you did not consider it at all a source of danger.”

We ask our readers to bear in mind that this steamer had a passenger certificate and was cleared by a Government official. Had it not been for this, we doubt not that the Wreck Commissioner would have addressed his two very pertinent questions to the owners instead of to the Board of Trade officers ; and if ever there was a case in which responsibility has been shifted from the shoulders of owners to those of a Government officer, this case is one. We feel for the owners in this case. They are notoriously careful in everything they undertake, and no firm is more desirous than theirs of keeping their ships seaworthy and safe, and the whole service up to the mark ; but that in no way interferes with the lesson taught by this case, which is, that the intervention of the Board of Trade and that Board's certificate of clearance as a guarantee of safety, acted as a shield to them. Not only are they screened and held blameless in every way, as they were bound to be under the circumstances, but they have not had to pay the Board's costs, although the solicitors for the Board applied for them. The Wreck Commissioner, no doubt, bore in mind that the principal local officer of the Board of Trade at Liverpool would have detained the ship had he believed her to be unsafe ; and, as his deputy and his staff of surveyors gave their certificate of clearance, which guarantees the safety of the cargo, how was it possible for the owners to contest that certificate, and insist, in the face of it, that the " skilfully contrived " arrangement, as the Wreck Commissioner called it, was not safe ? One thing was very remarkable in this case, viz., that the report of the Royal Commissioners on coal-laden ships appeared to have been studied very much less than it should have been. Indeed, it almost seemed at one time that the fact that the Board of Trade had not sent to every shipowner direct a copy of that report, and a warning would be regarded as a grievance on the part of the shipping interest. But seeing that the shipowners can get not only a copy of that report but a copy of the instructions issued to the Board of Trade officers thereon by simply asking for them at any Mercantile Marine Office, that fact ought to go far to show that if shipowners do not know of the recommendations in that report the blame scarcely rests at head-quarters. Moreover, our own pages,

and the pages of the *Shipping Gazette*, have more than once made its importance and much of its contents known. Those who run may read, and those who read may run from the dangers indicated in it.

The third case we must notice in this article is that of the *California*, heard before Lord Young in the Court of Sessions, in Edinburgh, on the 3rd July. We condense the particulars from the report contained in our contemporary, the *Shipping and Mercantile Gazette* of the 6th July:—

“ The pursuers in this action are the Registered Owners of the screw steamer *California*, one of the Transatlantic fleet of the Anchor Line Company, and they sue Lloyd's Association, which was formed for the purpose of surveying and classifying British and foreign ships, for £1,000 damages, on the ground that they had, in breach of contract, expunged the *California* from their register.

“ Pursuers say that before the *California* was built, and with a view to her classification in defenders' Register, the plans of her construction were submitted to the Committee of defenders' Association for approval. *The plans were approved of by the Committee, and when the building of the vessel was completed, her hull and machinery were duly examined and certified by Surveyors of the Association as in every respect satisfactory*, and she was in June, 1872, entered in the Register in the class of 100 A 1. Pursuers further state that by the then existing Rules of the Association, which formed the contract between the pursuers and the defenders, under which the special survey and classification were made, the defenders' Association became bound to return the *California* in the class assigned to her in their Register, and to let her appear as holding that class in the printed copies of that Register. From 1872 to 1876 the *California* stood in the Register classed as A 1 ; but in January, 1877, her classification was expunged, notwithstanding, as pursuers say, that they complied with the Rules as to surveys, and notwithstanding the thorough repair and efficiency of the steamer. In the printed copies of the Register for 1877 the vessel appears as having been deprived of her class in consequence of

non-compliance with the Rules of the Association. The *California* underwent her periodical survey in May, 1876, and at the time her classification was expunged she had, therefore, a considerable time to run.

"The defenders say that the classification obtained by the *California* was not for a term of years. Neither the Society, nor any one on its behalf, entered into any contract with pursuers ensuring or engaging that the *California* should continue upon the Register, without any additional requirements for safety than those exacted at her admission. Nothing more is guaranteed by the survey under which the ship is built than that she comes up to the standard then exacted. They further state that the classification of the *California* was expunged because of the owners refusing to fix a load-line which would be satisfactory to defenders. They narrate that awning-decks were originally fitted to passenger vessels for shelter in tropical climates, but they have since been employed for other and more general purposes. The sides of the superstructure were originally open, but the openings became more and more limited, and now the awning-deck sides are flush with the deck sides, so that the vessels present outwardly the appearance of high-sided ships. It has resulted from this that the awning-decked ships are peculiarly liable to be overladen without this being observed. The Committee of Lloyd's Register have had their attention much directed to the serious danger arising from this structure, and in December, 1875, and April, 1876, they adopted a resolution to the effect, that in all cases of awning-decked vessels classed in the Register Book, a load-line should be determined on for them, to be marked on the ship's side and recorded in the Register Book and on the certificate of classification, and that in every instance of non-compliance with this requirement within six months, the character of the vessel should be expunged from the Register Book. In May, 1876, the attention of pursuers was called to the regulations requiring a load-line, and they were urged to give effect thereto in the case of their awning-decked vessels (including the *California*) which stood upon the Register. On Jan. 30, 1877, pursuers wrote to the secretary of the Association, stating that while they adhered to their opinion that the action of the Committee had been arbitrary, vexatious, and unnecessary,

they would be glad to know what the Committee had to propose in connection with the *California*, in order that they might know whether such proposal would be likely to interfere materially with their business. Pursuers were informed that the Owners were to propose the load-line ; and pursuers, therefore, under protest, proposed a mean draught of 24 feet. The Committee were unable to agree to any load-line greater than 28, and this was intimated to pursuers, who refused to agree. Negotiations thereafter ceased, and pursuers' awning-decked vessels, including the *California*, were expunged.

" In answer, pursuers maintained that the regulations as to the load-line had no retrospective effect, and could not and did not apply to ships previously registered with the Association. Consequently, no load-line was ever fixed for the *California*. They also say that when the vessel underwent her periodical survey in May, 1876, no attempt was then made by defenders to force upon pursuers to have a load-line fixed for the *California*, and marked upon her sides, before certifying her as in a complete state of repair and efficiency.

" Lord Young was clearly of opinion that pursuers had no ground of action. Their claim was founded on an implied contract, to the effect that Lloyd's Association should retain their vessel upon the Register, even though subsequent knowledge and experience had satisfied them that her construction or character did not meet what was requisite for the public safety. There was no such contract in his Lordship's opinion. The defenders stated '*that it was the duty of the Committee of the Association to take care that the Register should, by the classification of the ships entered in it, faithfully and accurately represent their character in regard to safety and efficiency. For this end it was necessary that the Committee should from time to time, and as occasion required, exact qualifications for the several classes, which had the effect of excluding ships whose structure had been ascertained by experience to expose them to danger or objection. It is, and had always been, the practice of the Committee to alter the rules according to these considerations, and with reference to ships built under survey and already classed, and to exact compliance with the rules so altered as a condition of the*

vessels retaining their classification.' There was a general denial of the statements as to the practice of the Committee; but his Lordship regarded that denial as immaterial, *because he was of opinion that if the practice of the Committee had not been governed by these considerations it ought to have been*, and there was nothing in any contract between them and the pursuers, or any others, to hinder the Association from so acting. The value of registration and classification at Lloyd's consisted precisely in the confidence which the public had in Lloyd's Association, that they would act in the manner above set forth. At any particular time they could, of course, do no more than apply the rules according to the knowledge and experience then existing; but it was according to their duty to be vigilant—to have an eye to the whole facts connected with navigation, and *when experience showed that it was necessary to the safe navigation of vessels that a new rule should be introduced, it was their duty to introduce it*. If the public were to suppose and believe that they were under a contract with shipowners whose ships were already registered, not to apply any such rule to their ships, however necessary to the public safety it might be, they would, his lordship held, most justly forfeit public confidence, and the value which now justly attached to registration would altogether cease. He was, therefore, clearly of opinion that there was no implied contract to that effect, and an expressed contract would be ridiculous and extravagant on the face of it. His lordship, therefore, repelling certain pleas as to the Court having no jurisdiction, and sustaining certain other pleas to the effect that there was no contract, assolizied the defenders with expenses."

We do not know whether the Anchor Line intend to appeal from this decision, and we therefore make no comments whatever on this case; but we think it may be useful to reflect how far the words of Lord Young may be taken as bearing on certain other rules, that is to say, the Board of Trade Instructions to their Surveyors. Lloyd's Register is a voluntary association, and his Lordship says, "That if the practice of the Committee had not been governed by these considerations they ought to have been." These considerations are, "That they should from time to time,

and as occasion required, exact qualifications for the several classes, which had the effect of excluding ships whose structure had been ascertained by experience to expose them to danger or objection."

The Board of Trade is not a voluntary association, and does not merely enter in a register ships which comply with certain rules as to classification, but it is a department of the State responsible to Parliament, and required by an Act not to authorise steamers carrying more than twelve passengers to proceed to sea without a Government certificate that the ship is in her hull, equipments, and machinery, sufficient for the service intended, and in good condition for twelve months, nor unless the weight on the safety-valve is determined by the surveying officer, &c., &c. ; and further, the Board of Trade have power, and are required under another Act, to see that ships do not proceed to sea if they are in any respects unsafe. Seeing that the Board of Trade are intrusted by the Legislature with these duties, it is right, in fact, the public insist, that the duty shall be done ; or applying the exceedingly apposite words of Lord Young to the case of all bodies intrusted with the safety of the lieges, "they should from time to time, and as occasion requires, exact qualifications, &c., &c., and if the practice of the (Board of Trade) has not been governed by those considerations it ought to have been." It is a matter of convenience to shipowners, shipbuilders, and engineering firms that the rules should be known whereby the Board of Trade are governed in granting certificates of indemnity to passenger steamers, so that there can be no doubt on that point. The only question is shall the rules be so little onerous, and the surveys so perfunctory that they shall, while they give the certificate of indemnity, be framed and conducted with the object of giving the shipowner little or no trouble, or shall they be framed on the basis that they aim in the first instance at securing the safety of the lieges? The Legislature evidently intended the latter in 1854, and, having in mind the *Cricket* and other explosions, thought little whether the surveys should be convenient or inconvenient or inexpensive or expensive to owners, so that a measure of public safety be secured. The Legislature in 1876, understanding that the shipowners

regarded the former enactments as too onerous, established Courts of Survey to which owners might appeal against the Board of Trade. Seeing that the owners have never once appealed to the Court of Survey, it is only to be inferred that they have not had a case in point. In saying this, we do not forget that cases have arisen in which on appeal the Board of Trade have had to pay compensation for detention—but those cases have arisen not under the clauses relating to the survey of passenger steamers, but on those relating to the detention of ships alleged to be unsafe—and in two instances in which the Court awarded compensation to the owners for improper detention the ships were not very long in disappearing with their crews. The serious point involved is this: the certifying authority is always pretty safe in requiring precautions to be taken against casualty, and especially against dangers which practical men regard as almost certain; against symptoms which they regard as showing signs of inherent weakness; against fittings of a character which are known to be fraught with danger; and against the absence or defect of equipments deemed necessary to safety; whilst it is difficult, if indeed it is not impossible, for any court or any person to decide or declare that a certificate of safety and indemnity shall be given without the precautions referred to. If the ship continues to make her voyage without casualty, it is no proof that if she had met with casualty the precautions would not have been necessary; whereas, if she does meet with casualty, or disappears altogether, the inference in the one case and the certainty assumed in the other case is, that had the precautions been taken the vessel and her crew might have been safe; and it is always an ugly thing for owners to have on their minds, besides other responsibilities, the certain knowledge that, if life is lost, they will be blamed, and may suffer both in pocket and reputation for having disregarded what the surveying authority deemed to be a necessary measure of precaution.

The remedy for all this is indicated in the conclusion of our article of last month on the stowage of grain cargoes.

CORRESPONDENCE.

ACTION OF SCREW PROPELLERS.

To the Editor of the "Nautical Magazine."

SIR,—I have both received and read so many papers referring to the action of the propeller, when reversed, on the direction of a screw steamer's head, all of which appear to me, while right in some points, to be illusory in others, that I take the liberty of sending you a few plain remarks on this subject, while refraining from discussing the subject in detail.

I will commence my remarks by an anecdote, which may really be looked upon as my text. Many years ago, an American wooden screw steamship, of very light construction, encountered a heavy gale of wind, during which the rudder became disabled; she fell off into the trough of the sea, two or three heavy seas tumbled on board of her, and there appeared to be every prospect of the vessel's foundering. Fortunately, however, for the lives of those on board, the master, a thorough old sea-dog, was a man of coolness and resource. He reversed his engines, regulating their speed with sufficient judgment to enable his screw to perform the duty of a floating anchor and bring the stern of his ship up to the wind and sea, in which position she rode out the gale in safety.

Bearing in mind that the screw sometimes acts as a floating anchor or drogue, there is no difficulty in indicating the laws which govern the direction of screw steamers when reversing, especially if we first consider them independently of wind and tide. When any steamer is going at full speed ahead, with the helm either hard-a-port or hard-a-starboard, and the engines are suddenly altered to full speed astern, the immediate result will be much the same as though an anchor were dropped overboard from the stern, and the vessel's head will be at once canted outwards from the curve which she is making through the water, and the angle she will make with it will be determined by the length of the vessel, her speed through the water, and the radius of the curve, and

this almost, if not quite, independently of whether the screw be either right or left-handed, or the rudder be placed a-port, amidships, or a-starboard.

The action of the screw in reversing in a tideway, is to bring the vessel's stern to the tide ; in a breeze of wind, to cant her stern up wind ; wind and tide together, to cant her stern into a position modified by these two forces. The action of the rudder on the ship's direction when going astern is very feeble, as is also that of the screw. A right-handed screw, when going astern, will slowly bring the ship's stern to port ; a left-handed screw the reverse ; but either wind or tide, or both, may be sufficiently strong and have such a direction as to more than neutralise this effect. The great secret in manœuvring screw steamships, so as to turn them rapidly and in little space, is to handle them with their engines at full speed, and *always*, when practicable, to have good stern way on before going full speed ahead. The moment the engines are turned full speed ahead, no matter how much stern-way the vessel may have—the more she has the faster she will turn—the helm should be put hard over to port, if the vessel's head is intended to turn to starboard ; and hard over to starboard if she is intended to turn to port. There is no necessity to allow the vessel to range much either ahead or astern ; how much must depend upon the circumstances of each case.

I am, &c.,

D. M.

WATCH AND WATCH.

To the Editor of the "Nautical Magazine."

SIR,—Permit me to say a few words on the above subject, respecting which several letters have already appeared in recent numbers of your Magazine.

The object of my writing is not only to corroborate all statements made, but to urge the necessity of the "Three Watch System" as most essential to health and safety in every steamer, whether mail or not. All previous letters which have appeared seem to speak, not for the good of the profession as a class, but only for officers of mail steamships ;

therefore let me advocate the cause, as being equally necessary for their hard-worked, over-taxed, under-paid brethren of the cargo steamer.

Admitting the great responsibility which the first officer of a mail steamer has, respecting the general duties and order of the ship, it appears to me to be not greater than that which falls upon the first officer of a cargo steamer, considering the difference in amount of assistance which each has, the mail steamer probably having four or five mates, with bo'sun, bo'sun's mates, quarter-master, &c.

In the case of cargo steamers, even of large size, there are generally only two mates, very few hands, and no petty officers except a bo'sun; yet these men have to keep their ship in good order, have her ready for cargo as soon as one is out, and without the aid of company's shore gangs, to see to the stowing and trimming of cargo, and be responsible for delivery. When coal is loaded, working day and night, they have to superintend hauling the ship to and fro under the tips, perhaps never getting to bed while the ship is in dock, and then off to sea, to keep watch with no junior officers to relieve them. It must be remembered too, that where there are only two mates, they have to relieve each other for meals, and this always takes away an hour from the one who has the watch below, and turning out again at seven bells to observe the sun, very little rest can have been had after eight hours' night watching on the bridge; and as all the time below is required for sleep, to fit him for his next watch, an officer has not any time for reading and improving his mind under the "Watch and Watch" system.

Therefore, more rest is equally and absolutely necessary for the mates of all steamers, both as regards their own health, and the safety of the ship and crew under their charge during their watch. In the engine-room, even in very small steamers, three watches are kept; and if the "Watch and Watch" system gives too little rest to engineers, who simply go from the engine-room to their berths without any exposure, surely the same system must give too little to deck officers, who are exposed to all weathers; and the bridge of a steamer, going head to wind and sea, is not an enviable place.

All steamships should have three officers for keeping watch, and in the case of a vessel which did not carry one, and to avoid extra expense, let a third mate be shipped instead of a boatswain; but before this can be done, to be of any use to us, we must get the sanction and acknowledgment of the Board of Trade that the third mate will be held as a responsible man as a watch officer. We can do good work by advocating and giving vent to suggestions, such as "Watch and Watch," especially through the *Nautical Magazine*; but whatever we do, or try to do, let it be for the good of the whole, and not for any one class of the profession; it being equally a hard life to all.

Diverting from the subject, while writing, permit me to refer to the closing passages of a letter which appeared in your number for October last, from "R. W. P.," W. I. Mail.

Let me assure him that there are gentlemen (in the true sense of the word), and superior men too, to be found in such vessels as "Mediterranean Grass Carriers," as well as in Mail Steamers, and the reverse in both. Supposing a "Mail" Officer had to descend to the level of the "Mediterranean Grass Carrier," need he be any the less "superior" man he was, or any less a gentleman? It does not become a "Mail" Officer to speak so disparagingly of his fellow officers, who hold like certificates, but who are less advantageously situated than himself. All have a place to fill, and a work to do, and I daresay the officer of a "Mediterranean Grass Carrier" could do manœuvres with his ship which the "Mail" Officer could not if he were placed there, and *vice versa*. And as to the insinuation of tarry hands and appearance of a sailor, I think it is pretty well known where our sailors spring from, and having the misfortune of appearing like a sailor is simply consequent upon his really being one, and of which he probably feels no shame.

Let not "R. W. P." take offence at my reference to his letter, for what prompted me to do so, is the wish I have, and which we all should have, to better and improve those who may be below our level, and who, by having consideration and respect shown them, may learn to respect themselves more, and help to make the

profession what it should be, an intelligent, honourable, and trustworthy body of men.

Yours respectfully,

WM. M. YOUNG,

June 27th, 1878.

Master s.s. *Colombo*.

DISCIPLINE AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—I will feel obliged if you can find space in your valuable publication for the following.

Having seen an article in your April number, on Consular Courts, I beg to submit to yourself and your readers a somewhat similar case. The steamer of which I am mate loaded in the Tyne, in the beginning of May, of this year, for a voyage to Genoa and other ports. Before getting clear of the Channel, I found that one of my watch steered in such an unreasonable manner that I was obliged to turn him away from the wheel; in addition to which he showed himself to be a thorough loafer and impostor. I have frequently been compelled, as often as three times in a watch, to go forward and order him out of the fore-castle to his work; and on one occasion, having sent him to chip the funnel, I went to see how he was getting on, when I found him sitting on the poop, smoking his pipe, at which I was so enraged as to strike him across the face with the flat of my hand, whereupon a fight ensued between us. Two or three days after this, at the captain's request, I called him to the wheel again; but on his continuing to steer very badly, being seldom within two and often as much as four points off his course, he was examined in the presence of the captain, second mate, and myself, when we found that he did not even know the different points of the compass correctly, nor could he splice or do other sailors' work properly. Again, when on the look-out, he would never report anything, either shore or ships' lights, and on being asked the reason, said he would not do so unless he saw there was going to be a collision. On another occasion, being ordered to clean brass work, he went down the forepeak and deliberately cut a piece out of the heart of a brand new coil of

Manilla rope. He also, one night, killed, cooked and partly ate a goose belonging to the captain; and two nights after he treated a fowl in the same way. Whenever taxed with any misdemeanour, he always most positively denied it. He also threatened to the third and second engineers, and others to *do* for me before he would leave the ship. Previously to arriving in port he refused duty, and consequently was not allowed to resume work afterwards; was logged for the offence, and the statement read over to him. On arrival at Genoa, the Captain took him before the Consul, and stated his case, recounting the several accusations against him, upon which the Consul mildly rated the man for his disobedient conduct, and informed the Captain that if he chose he would call a Naval Court to enquire into the case, but that most likely the decision given would go against the ship, and advised paying the man's passage home if he wished to get quit of him, to which the Captain assented, finding there was no other alternative, and remarking to the Consul that if this was all the justice he could get he would rather pay a few pounds than be pestered with carrying such a fellow.

I beg to remark that if Her Majesty's Consuls abroad afford us so little protection as this it will soon be quite unsafe for Captains and Officers to go to sea. Apologising for trespassing so much on your valuable space,

Believe me, Sir,

Yours respectfully,

Constantinople, 21st June, 1878.

A SUBSCRIBER.

[We gladly insert the above note from our valued Subscriber. We presume that, to make the thing quite perfect, the Captain shipped him with a V.G. Certificate, and perhaps, in face of all the above circumstances, gave him a V.G. Certificate for conduct, character, and ability, on discharge. If masters of ships employ crimps to get crews, and give V.G. Certificates to men of this sort, they are themselves to blame. We do not know that a V.G. was given in this case, but it is usually given in parallel cases. We quite sympathise with our Subscriber, but it is possible that the advice of the Consul was right, as he condescended to strike the

man. It is a mistake to strike men, and this mistake undoubtedly placed our correspondent, who was right before, in the wrong after. It should never be initiated by any officer. We strongly object to striking, but if it comes about in spite of the officer's desire to the contrary, it is no use playing at it. What is worth doing, is then worth doing well.—ED.]

BOOKS RECEIVED.

Right and Left-Handed Screw Propellers. Some Practical Hints by an Old Shipmaster. H. Morgan, Bute Docks, Cardiff. 1878.

THIS is the best sixpennyworth we have ever read on the subject. The author writes sense in English, which would have been plain if he had got some one to look over the proofs for him. In spite, however, of its obvious drawbacks we should advise all master mariners, as well as all lawyers engaged in collision cases, to invest in it. Some of our Nautical Assessors and Judges of Wreck Enquiry Courts evidently do not know such a simple thing as this: "When steamers are going at any speed ahead the first reversing turns of the propeller only tend to throw her at, or nearly at, right angles to the course she was previously steering." The pamphlet is not well written, it contains errors and expressions which make some sentences unintelligible, and it is badly printed; but, for all this, the ideas started, and the plain, unvarnished record of an old shipmaster's experience, are too good for any one to neglect with impunity.

The Battle of Mobile Bay, and the Capture of Forts Powell, Gaines, and Morgan, by the combined Sea and Land Forces of the United States, under the command of Rear-Admiral David Glasgow Farragut and Major-General Gordon Granger, August, 1864. By Commodore Foxhall A. Parker, U.S.N. Boston: A. Williams & Co. 1878.

COMMODORE PARKER is already well known to his countrymen, and in a less degree in England, as the author of "Fleets of the

World," "Fleet Tactics under Steam," "Squadron Tactics," &c. Having been an actor in the battle of Mobile Bay, he has done well in publishing the details of that important engagement. The book only pretends to be the substance of a lecture delivered before the Military Historical Society of Massachusetts; but the Commodore has appended to his remarks official reports and papers never before published; anyone, therefore, who wishes to acquaint himself with the particulars of that famous sea and land fight will, in "The Battle of Mobile Bay," find himself in possession of a wonderfully clear and complete description of very eventful scenes. The work is appropriately dedicated to the officers, seamen, and marines who served on the occasion, and the narrative will prove of especial interest to the friends of those who took part in the fight; it will, however, be no less interesting to the historian, and to the student of naval tactics, for whose benefit two charts are given, which illustrate the proceedings on successive days. It is pleasing to see that the Commodore, in the compilation of his book, acknowledges obligations alike to members of the late Confederate and Federal services—"regarding the reputation for intrepidity gained by Federal and Confederate sailors and soldiers during the civil war as the common heritage of the American people."

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all communications should be addressed.

ENGLISH (APPLICATIONS).

2408. John Louis Lay, Paris. "Improvements in the construction of torpedo boats and in apparatus to be used in connection therewith."

2421. Jas. Sample, Blyth. "An improved screw propeller."

2457. Luke Thomas, Bayswater. "A new or improved mode of placing or fixing rudders for steering vessels."

2495. Jas. Cross, Farnworth. "Improved means of increasing speed of traffic on canals and other inland waters."

2508. Sir Jas. Liston Foulis, Bart., Colinton, N.B. "New or improved apparatus or appliances for preventing the entrance of water into, and for ventilating, boats or vessels, the same being especially adapted for enabling boats of small dimensions to proceed to sea with safety."

2510. Andrew Blair, Glasgow, Engineer. "Improvements in screw or oblique-bladed propellers."

2512. Charles Ross Limey, Sunderland. "Improvements in closing and opening the water-tight doors of ships."

2547. Harry R. Newton, London. "The construction of ships and boats of all forms and kinds, or of parts of both thereof, for the better preservation of life and property at sea, and for the better control of all vessels under difficulties."

2552. Charles Dubois, Marseilles. "Improvements in the manufacture of paints or compositions for preventing the fouling of ships' bottoms."

2576. Thos. Horsfall Watson and Samuel Joseph Woodhouse, Leeds. "Improvements in sub-marine costumes and in the appliances to be used therewith, such improved costumes being also applicable to other purposes."

2580. Wallace Bartley, Rainhill. "Improvements in and relating to water-tight bulkhead doors, and in the method of and apparatus for actuating them."

2585. Léon Somgee, of Brussels, Engineer. "Improvements in screw propelling and other vessels for navigation."

2592. Wm. Chapman, Limehouse, and Samuel Kimbel, Poplar. "An improved mode of and apparatus for raising sunken ships, or preventing ships from sinking after collision, or on having sprung a leak."

2599. Henry Jackson, Engineer, Deptford. "Improvements in screw propellers."

2611. John Howard Scott and Frederick Whittaker Scott, of the firm of Scott Bros., Glasgow and Manchester, and John Gilmour, engineer to said firm. "Improvements in ship towage by wire or other ropes, and in new or improved apparatus or mechanism connected therewith."

2635. Henry Forsey Brion and John Thompson, London. "Raising sunken vessels by the displacement of water within the vessels by air or gases."

2648. Jas. Atherton, Liverpool, Engineer. "Improvements in and appertaining to water-tight doors of ships and other navigable vessels, and to the closing and opening of such water-tight doors; also applicable as a whole or in part to various other like purposes."

2770. Empson Edward Middleton, 9, Anglesea Place, Hampshire. "An improved method of building ship, yacht, sailing-boat, and other vessels, and of altering by lengthening by the stern, the after hull of ship, yacht, sailing-boat and other vessel."

2778. Martin Underwood, Architect, London. "Armour plating in cast steel or wrought iron for men-of-war or other vessels, for forts or other defensive or aggressive works; also for light-houses, piers, &c."

2781. Wm. Price, Egmonton, and John Eardley, Yerburch, Sleaford. "Improvements in the mode of and apparatus for stopping holes or leaks in the hulls of vessels."

2788. Henry Holman Drake, Fowey, and James Terence Fitzmaurice, R.N., Maidenhead. "Improved method of and apparatus for protecting vessels from torpedo attacks."

ABBIDGEMENTS.

4250. Henry Thomas Brown, New York. "Improvements in submarine torpedoes and in the means for propelling the same." The torpedo is made of a square or rectangular form, and furnished with a sharp edge capable of cutting nets and like obstructions, and containing a firing pin actuated by percussion against the ship's side, and furnished with a locking device to guard against premature explosion. The torpedo is pushed with great force out of a guide-tube by a piston driven forward by compressed air, gas, or steam. A sluice valve is fitted at the end of the tube, and a textile disc valve behind it which allows the torpedo to make its exit. This valve retards the water till the sluice valve is shut, when a new disc valve is inserted.

4279. Robert Griffiths, Bayswater. "Improvements in the

construction, arrangement, and application of screw propellers, at the stern, bow, or both ends of steamships or vessels." This consists in the use of a boss, about one-half the diameter of the screw. Projections of about the same contour and size of the boss are fixed on the run of the ship, so that the resistance given by the water to the boss is diminished. The screw revolves in a tunnel or casing furnished with a trumpet mouth, and radial bars are arranged to take the twist out of the water which has been given it by the screw. Bars are arranged to prevent objects entering the casing, and several modifications are shown.

4281. Wm. Hair Haseler, Birmingham. "Improvements in magnetic or mariner's compasses and in ornamenting the said compasses." This consists in fixing a small figure of an animal, man, bird, or other creature to the needle or compass, card, pointing north so that the position of the needle or card is readily discovered even when tolerably dark. The figure serves to balance or steady the needle or card, portions of the figures being bent down to form vanes for the purpose.

4348. Mathew Paul, Andrew Paul, and John Haythorn, Dumbarton, Engineers. "Improvements in steering apparatus and applicable for starting engines and to hoisting apparatus." This is to dispense with a great deal of the toothed gearing usually employed. A steam cylinder, the valves of which are worked from the piston, operates two plunger pumps to force water to a directing valve which is a four way cock, operating a moving hydraulic cylinder. This cylinder is furnished with a double rack gearing into a pinion on shaft furnished with a two-grooved pulley for the rudder ropes or chains. A handing shaft is arranged by suitable gearing to control the hydraulic cylinder.

4361. Conrad D'Huc Gustave Dressler, London. "Certain improvements in the construction of sailing and other vessels whereby greater stability and increase of speed is effected." The body of the vessel (preferably a cylinder with conical ends, and a deck on top) is pivoted by strong horizontal pivots to a deep keel to which the masts are attached in any suitable manner. By this means when a breeze comes the masts and keel heel over and the hull floats steadily without divergence from the perpendicular.

AMERICAN.

203399. George D. Wychoff, of Philadelphia, Pennsylvania. "Floating treasure and other buoys." This consists of a buoy with two shells, an inner and an outer, the outer one being divided by diaphragms into two water-tight compartments, which may hold water and provisions if desired. A framework at the top supports a beacon and a bell. The main receptacle to contain the valuables, &c., is so arranged as to be only opened by the owners or consignees of the vessel. A floating weight resembling a straw hat in shape is used to steady the buoy.

203473. Siebus C. Maine, Boston. "Tidal motor." This consists in a complicated arrangement of wheels and weights, the rising and falling of the tide operating the latter. When used as a light-vessel, a gong is arranged above the vessel so that as the mechanism revolves it operates the gong by bell crank levers giving a continuous alarm.

FRENCH.

No applications.

BELGIUM.

No applications.

GERMANY (PATENTS GRANTED).

1532. F. Alsing, Copenhagen. "An apparatus for registering the compass course of ships."

1587. J. Caselli, Florence. "An apparatus for working rudders by the motive power of steam or water by using magnetism for starting and stopping."

1664. C. G. Norrenberg, of Cologne. "A construction of driving wheels for towing vessels by means of two endless wire cables with gripping irons."

AUSTRIA.

81. O. Monti, Trieste. "An auxiliary apparatus for compasses, called Course Corrector."

56. B. L. Thomson, London. "Improvements in protecting or preserving ships and other submerged or partially-submerged structures."

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
182	ENGLAND — Bristol Channel — Lundy Island	Alteration of fog-signal.
183	SCOTLAND—Firth of Clyde—Pladda	Fog-horn.
184	NORTH SEA—Heligoland	Intended change in fog-signal.
185	„ Jutland—Horn Reefs	New light-vessel and fog-signal.
186	BALTIC—Finland Gulf—Helsingfors	Beacons round Lonnän Islet.
187	NORTH ATLANTIC — Iceland—Cape Reykjavik	Proposed light.
188	MEDITERRANEAN—France—Étang Thau —Balaruc Point	New light.
189	„ France—Toulon	Light-vessel off St. Mandrier Pier.
190	„ Sicily—Trapani Harbour	Light and buoy off new breakwater.
191	„ Cerigo Island — Cape Spathi	New light.
192	ADRIATIC—Durazzo	Particulars of new light on mole.
193	„ Gulf of Arta—Provesa	Torpedoes and regulations.
194	MEDITERRANEAN — Spalimati Islands—Pasha Island	Particulars of new light.
195	INDIAN OCEAN—Ceylon—Batticaloa	New light.
196	EASTERN ARCHIPELAGO—Java—Batavia Roadstead—Alkmaar Island	New temporary light.
197	EASTERN ARCHIPELAGO — Philippine Islands—Panay Island—Ilo-Ilo	Shoaling of Oton bank.
198	CHINA—Yangtze Kiang—Kiu-Toan	Alteration of light.
199	AUSTRALIA—South Australia—St. Vincent Gulf—Port Vincent	New Beacons.
200	„ South Australia—St. Vincent Gulf—Port Alfred	New beacon.
201	„ Queensland—Cape Bowling Green	Re-exhibition of light.
202	SOUTH AMERICA—Magellan Strait—Indian Reach	Discovery of new shoal.
203	„ Magellan Strait — Sarmiento Channel—Denderek Rocks	Discovery of new shoal.
204	„ Magellan Strait—Inocentes Channel—Suwanee Rock	Supposed doubtful rock seen again.
205	„ Magellan Strait—Broad Reach —Sandy Point	Re-exhibition of light.
206	„ Brazil—Santos Harbour	Depth of water on sunken rock.
207	„ New Granada—Rio Magdalena	Navigation of river.
208	UNITED STATES — Mississippi River — South Pass	Alteration of lights.
209	„ Georgia — Savannah River—Tybee Knoll	New lights and range beacons.
210	„ Rhode Island—Newport Harbour	Removal of automatic signal-buoy.
211	„ Maine—Portland Harbour	Alteration of light.
212	„ Maine—Penobscot Bay —Fox Islands	New automatic signal-buoy.

NAUTICAL NOTICES.

182.—ENGLAND.—*Bristol Channel.*—*Lundy Island.*—*Change in Fog-Signal.*—On and after 1st August, 1878, rockets specially

prepared for the production of sound, will be substituted for the gun, as the fog-signal at Lundy island. During fog, and in thick weather, a rocket (which on reaching an altitude of about 600 feet will explode with a loud report) will be discharged every ten minutes.

183.—SCOTLAND.—*West Coast.*—*Pladda Lighthouse, Firth of Clyde.*—*Fog-Signal.*—A fog-horn has been erected at Pladda island lighthouse, in the Firth of Clyde. It is placed at the height of about 50 feet above the level of the sea, and will be sounded night and day during foggy or thick weather, beginning as soon as possible after the commencement of the fog. The signal will be sounded at regular intervals, the periods of sound being of five seconds' duration, and the periods of silence ten seconds' duration.

184.—NORTH SEA.—*Heligoland.*—*Proposed change in Fog-Signal.*—During the ensuing autumn, the fog-signal at Heligoland, instead of gun-cotton fired from the surface of the island as at present, will consist of a rocket, which on reaching an altitude of about 600 feet will explode with a loud report. The signal will be discharged every ten minutes in thick and foggy weather, instead of every fifteen minutes as hitherto.

185.—NORTH SEA.—*Jutland.*—*West Coast.*—*Horn Reefs.*—*Light-Vessel and Fog-Signal.*—A light is now exhibited from a light-vessel placed at the outer extreme of Horn reefs. It is a revolving white light, giving a flash every half-minute, and elevated 31 feet above the sea. The light-vessel painted red with white cross, and the words *Horns Rev* on her sides, has two masts, carries a red globe at the foremast head, and is moored in 18 fathoms water. A white riding light is also exhibited from the forestay, 6 feet above the rail. Position, as given, lat. $55^{\circ} 34' 5''$ N., long., $7^{\circ} 19' 30''$ E. During thick and foggy weather, a powerful siren trumpet (worked by a caloric engine) will give three blasts in quick succession every two minutes.

Note.—A black buoy with white staff and two brooms, is moored E. by S. $\frac{1}{4}$ S. distant 5 miles from Horn reefs light-vessel, in 5 fathoms water. Variation, 15° W.

186.—BALTIC.—*Gulf of Finland.*—*Helsingfors.*—*Beacons sur-*

rounding Lonnán Islet.—In consequence of explosive material being stored on Lonnán islet, northward of Sveaborg fortress, eight beacons have been moored round the islet. Yellow flags are shown from the beacons (masts), and vessels should not pass within them.

187.—NORTH ATLANTIC.—*Iceland.*—*Light at Cape Reykjanäs.*—It is proposed to establish on Cape Reykjanäs, the south-west point of Iceland, in lat. $63^{\circ} 49' N.$, long. $22^{\circ} 41' W.$

188.—MEDITERRANEAN.—*France.*—*South Coast.*—*Étang Thau.*—*Light on Balaruc Point.*—A light is now exhibited from a lighthouse recently erected on Balaruc point, Étang Thau. It is a *fixed white* light, elevated 25 feet above high water, and visible 10 miles. The lighthouse, 11 feet high, is constructed of brick. Position, lat. $43^{\circ} 26' 5'' N.$, long. $3^{\circ} 40' 20'' E.$

189.—MEDITERRANEAN.—*France.*—*South Coast.*—*Toulon Outer Road.*—*Light-Vessel near Extremity of St. Mandrier Pier.*—A light is now exhibited from a light-vessel moored near the extremity of the pier in course of construction at St. Mandrier, Toulon outer road. It is a *fixed red* light, elevated 32 feet above the sea, and visible one mile.

Note.—Vessels should not pass southward of this light-vessel.

190.—MEDITERRANEAN.—*Sicily.*—*West Coast.*—*Trapani Harbour.*—*Buoy and Light marking Breakwater.*—A buoy has been placed to mark the extremity of the breakwater in course of construction, extending from Ronciglio point, Trapani harbour. During the day, a white and red flag will be shown from the buoy; and at night, a *fixed white* light.

191.—MEDITERRANEAN.—*Cerigo Island.*—*Cervi Channel.*—*Light on Cape Spathi.*—The light is a *fixed and flashing white* light; the flashes are of *ten seconds'* duration *every minute.*

192.—ADRIATIC.—*Durazzo Light.*—The following information has been received relative to the light exhibited from the mole at Durazzo:—The light (*fixed*) shows *white* between the bearings of $E. \frac{1}{4} N.$ and $N.E. by E. \frac{1}{4} E.$; *red* between $N.E. by E. \frac{1}{4} E.$ and $N. \frac{1}{4} E.$; and again *white* from $N. \frac{1}{4} E.$ to $N.W. by W. \frac{1}{4} W.$ The white light is visible 12 miles, and the red light 10 miles. *Variation, $9^{\circ} W.$*

193.—ADRIATIC.—*Gulf of Arta.*—*Regulations for the Approach*

to Prevesa.—Torpedoes having been laid down at the entrance to Prevesa strait, vessels are prohibited from entering or leaving the port at night, and from anchoring off fort Ultz Kalia.

194.—MEDITERRANEAN.—*Spalmatori Islands*.—*Khios Strait*.—*Pasha Island Light*.—The following information relates to the arc of visibility of the light exhibited on the east point of Pasha island, Khios strait :—The light (*revolving*) is visible through an arc of 247° , or from the bearing of N.E. by N. to that of S.E. by S. Variation, $6\frac{1}{2}^{\circ}$ W.

195.—INDIAN OCEAN.—*Ceylon*.—*East Coast*.—*Light at Batticaloa*.—A light has been established on a flagstaff near the mouth of Batticaloa lake. It is a *fixed white* light, elevated 50 feet above the sea, and will be shown from the 15th of February to the 31st of October, the time during which the port is open. Position given, lat. $7^{\circ} 48' 50''$ N., long. $81^{\circ} 41' 20''$ E.

196.—EASTERN ARCHIPELAGO.—*Java*.—*Batavia Roadstead*.—*Light on Alkmaar Island*.—A temporary light has been established on the south end of Alkmaar island. It is a *fixed red* light, elevated 56 feet above high water, and visible 8 miles all round the horizon. The lantern is hoisted to the top of an iron post fixed in a stone base. Position given, lat. $5^{\circ} 59' 12''$ S., long. $106^{\circ} 50' 15''$ E.

197.—EASTERN ARCHIPELAGO.—*Philippine Islands*.—*Panay Island*.—*Port Ilo-Ilo*.—*Shoaling of Oton Bank*.—This bank is composed of shifting sand, and vessels should not attempt to cross it. The northern channel across Oton bank, formerly carrying a depth of from $8\frac{1}{2}$ to 4 fathoms, has shoaled considerably and the pilots have recently declined to take vessels drawing less than 13 feet through it. The south channel (between Oton bank and Guimeras) is now exclusively used by the pilots.

198.—CHINA.—*East Coast*.—*Yangtze-Kiang*.—*Kiu-toan Beacon Light*.—A *fixed red* light, visible 5 miles is now shown from the Kiu-toan beacon, instead of a white and red light as formerly.

199.—AUSTRALIA.—*South Australia*.—*St. Vincent Gulf*.—*Port Vincent*.—A pile beacon, having a circular head painted black, has been erected on the north end of the middle spit in two fathoms

low water. Also, another black pile beacon, with circular head, has been erected on the tongue of sand, Orontes bank, in lat. $34^{\circ} 45' 30''$ S., long. $137^{\circ} 59'$ E., in $2\frac{1}{2}$ fathoms low water, and bears E. $\frac{1}{2}$ N. 4 miles from the beacon on north end of middle spit.

200.—AUSTRALIA.—*South Australia.*—*St. Vincent Gulf.*—*Port Alfred.*—*Black Point.*—A pile beacon, with circular head painted black, has been erected on the north end of the spit running off from Black point, in 8 feet low water. At a distance of 300 yards, north of beacon, 12 feet will be found at low water.

201.—AUSTRALIA.—*East Coast.*—*Queensland.*—*Cape Bowling-Green Revolving Light.*—With reference to notice respecting the temporary alteration in Cape Bowling-green light, pending the removal of the lighthouse to another position, further notice has been given that the lighthouse having been moved 120 yards southwest of its original position, the *revolving light* was *re-exhibited* on 15th April, 1878, and the temporary light discontinued. The light attains its greatest brilliancy *every minute*, and is elevated 70 feet above the mean sea level.

202.—SOUTH AMERICA.—*Magellan Strait.*—*Indian Reach.*—H.M.S. *Amethyst*, while proceeding from port Grappler to Escape reach, *struck on a shoal*, which was found to extend from 1 to 4 cables from the north point of Saumarez island. The shoal has two rocky heads 2 cables apart, N.W. by N., and S.E. by S.; with 10 fathoms between; the easternmost head, situated nearly 1 cable in a N.N.W. direction from the north point of Saumarez island, has 12 feet; and the westernmost head 13 feet water. The kelp in this neighbourhood is visible only from a short distance. There is a depth of 14 fathoms between the eastern rocky head and Saumarez island.

Tides.—The flood tide in this vicinity was observed to set north-east, and the ebb south, towards the shoals. *Variation*, $21\frac{1}{2}^{\circ}$ E.

203.—SOUTH AMERICA.—*Magellan Strait.*—*Sarmiento Channel.*—*Denderoh Rocks.*—The German steam-vessel *Denderoh*, in 1877, after striking on a rock, near point Delgada, rapidly sunk and grounded on another rock a short distance south of it, in 3 fathoms water with $8\frac{3}{4}$ fathoms close-to, at half a cable from the shore, in a westerly direction from the point. Point Delgada should be

approached with caution, as these dangers are only distant about $1\frac{1}{2}$ cables eastward of the fairway of the channel between point Delgada and Esperanza island.

204.—SOUTH AMERICA.—*Magellan Strait*.—*Inocentes Channel*.—*Suwanee Rock*.—This rock, reported in the year 1862 to lie S.W. $\frac{1}{4}$ S., three-quarters of a mile from Europa point (east side of Inocentes channel), but the existence of which was considered doubtful, has again been seen; the master of the British steam vessel *Dacia* having, on the 4th of August, 1876, at low-water spring tides, observed the rock in the above-mentioned position, and found that it was marked by kelp.

205.—SOUTH AMERICA.—*Magellan Strait*.—*Broad Beach*.—*Sandy Point Red Light*.—With reference to notice respecting the temporary discontinuance of Sandy point lights, information has been received that the *fixed red light* indicating the anchorage ground in Sandy point road is *re-exhibited*.

206.—SOUTH AMERICA.—*Brazil*.—*Santos Harbour*.—*Depth of Water on Sunken Rock*.—With reference to notice on the removal by blasting of the sunken rock off South Outeiro bluff, Santos harbour, further information has been received that at low-water spring tides the depth of water on this rock is now 19 feet. Mariners are cautioned accordingly.

207.—SOUTH AMERICA.—*New Granada*.—*Rio Magdalena*.—*Baranquilla*.—The following information relating to the navigation of Magdalena river is derived chiefly from a report by Mr. J. W. Sansom, master of the British steamship *Andes*, 1878. The *Andes* drawing $16\frac{1}{2}$ feet, when crossing the bar of Magdalena river, on 14th January, 1878, had $22\frac{1}{2}$ feet least water on the port side of the ship, and at the same time 27 feet on the starboard side. A depth of 24 feet was carried for two or three ship's lengths; thence to the anchorage 5 to $6\frac{1}{2}$ fathoms were obtained. At the time of entering the river the trade wind was blowing strong and there was a heavy sea outside, but the water on the bar was smooth. On leaving the river eight days later, six casts of 19 feet were obtained on the bar. The *Andes* was then drawing $14\frac{1}{2}$ feet, and according to the statement of the two pilots who were on board, was in mid-channel, but it has since been ascer-

tained that the vessel crossed too far to the westward, and that there was a depth of 25 feet on the bar. There was less wind and sea outside the river on this occasion than at the time of the vessel entering, but there was a swell on the bar. The depth of water on the bar varies at different seasons, and the channel is subject to change. Mr. Sansom is of opinion that it is not advisable to enter the river in the dry season when strong N.E. winds prevail, and that it is not possible to enter during the months of March and April. A vessel might find sufficient water on entering, but would probably be detained for want of water to recross the bar. In the month of May last, a depth of only 15 feet was reported. Mr. Sansom reports a dry sand bank, recently formed, inside the mouth of the river. Turning a ship in the river can only be accomplished with safety by means of hawsers. Commander W. Stewart, H.M.S. *Plover*, remarks, April, 1878, that steam-vessels drawing less than 15 feet, now enter Magdalena river, discharge and take in their cargoes at Baranquilla instead of at Savanilla; the principal exports are ivory-nuts, coffee, sugar, fustic, india-rubber, cinchona-bark, specie and tobacco. The Government of Columbia contemplate connecting the capital Bogota with the Magdalena below the rapids by means of a railway.

208.—UNITED STATES.—*Mississippi River*.—*Alteration in Colour of Lights at South Pass*.—The following alterations have been made in the colour of the lights on the east side of the jetties at South pass, and head of the passes, Mississippi river, viz.: the lights are *fixed red*, instead of *fixed white*.

209.—UNITED STATES.—*Savannah River, Georgia*.—*Tybee Knoll Range Beacons*.—On and after November 1, 1878, lights will be shown from the beacons recently erected at the eastern end of Long island, to guide through the dredged channel from Tybee roads into the Savannah river. The front light will be *fixed white*, 24 feet above the mean sea level, exhibited from the upper part of the keeper's dwelling—a one-story-house, painted white. The rear light will be *fixed white*, 47 feet above mean sea level, exhibited from a frame tower, painted white. They are 720 yards apart, on a W. $\frac{1}{4}$ S. and E. $\frac{1}{4}$ N. bearing. After crossing the bar on the range of Tybee beacon and lighthouse, from near

the Inner Bar buoy (No. 8, black), steer N.W. by N. until the Tybee island knoll lightship bears W. by N. $\frac{1}{4}$ N., then steer for the lightship until the Tybee knoll beacons are in range.

210.—UNITED STATES.—*Rhode Island*.—*Newport Harbour*.—*Removal of Automatic Signal-Buoy*.—The automatic signal-buoy moored off Castle hill, near the entrance to Newport harbour, Rhode island, is now removed.

211.—UNITED STATES.—*Maine*.—*Portland Harbour*.—*Breakwater Light*.—The following alteration has been made in the character of the light exhibited at the extremity of the breakwater, Portland harbour, viz., the light is *flashing red*, with flashes at intervals of *fifteen seconds*, instead of fixed red.

212.—UNITED STATES.—*Maine*.—*Signal-Buoy near Fox Islands, Penobscot Bay*.—An automatic signal-buoy, painted with red and black horizontal stripes, and giving blasts of a whistle at short intervals, has been moored at the entrance to Fox Island Thoroughfare, Penobscot Bay, Maine, in 20 fathoms, low water.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, 1878.

No. 15.—CHINA SEA DIRECTORY, Vol. III., Notice 8, various points on the coast; the Upper Yangtze Kiang, and the Yellow sea.

No. 16.—CHINA SEA DIRECTORY, Vol. IV., Notice 6, Japan and Mariana or Ladrone islands.

No. 17.—CHINA SEA DIRECTORY, Vol. III., Notice 9, information relating to the east coast of China, from Breaker point to the river Min.

No. 18.—PACIFIC OCEAN, Notice 14, South-Western part; Fiji islands.

No. 19.—SEA OF MARMORA, Notice 1, Ismid gulf and Tuzla bay.

No. 20.—AUSTRALIA DIRECTORY, Vol. II., Notice 24, Elizabeth reef.

No. 21.—AFRICAN PILOT, South and East coasts, Notice 14, information concerning Delagoa bay and the coast near cape St. Lucia.

No. 22.—SOUTH AMERICA PILOT, Part II., Notice 16, channels between Magellan strait and gulf of Penas.

No. 23.—WEST INDIA PILOT, Vol. I., Notice 6, New Granada, navigation of Magdalena river—Baranquilla.

OUR OFFICIAL LOG.

INSTRUCTIONS TO SURVEYORS.—HOME TRADE STEAMERS
CARRYING DECK PASSENGERS.

Board of Trade, Marine Department, July, 1878.

Note.—This Circular is a reprint of Circular 885, with some additions found necessary by way of explanation.

A new form of Survey 6a., and of declaration, are forwarded for the information of Surveyors. In granting future declarations for home trade passenger steamships the Surveyors are to be guided by the following instructions.

APPLICATION FOR SURVEY.

Each and every section or part of the ship intended for passengers, whether on deck or below, is to be described shortly in the form of application for survey, and the number and class of passengers each such section or part is intended to accommodate when free from cattle, animals, cargo, or other incumbrance is to be stated.

MEASUREMENTS.

The surveyors should measure the ship in sections or parts as set forth in the application for survey, taking care that some definite limits, or some mark or conspicuous object indicates the boundary of each space which is measured separately.

The deck space set apart for deck or third-class passengers is always to be measured from *abaft* the windlass (as at present) to a mark, which in paddle-steamers shall be placed over the shaft, and in other vessels shall be an arbitrary line marked vertically on the house or bulwarks amidships, or as near thereto as convenient. From this mark aft the deck space is to be measured as far as the deck or third-class passenger accommodation extends, whether to a break or raised quarter-deck, to a poop, or the entire after-length of the deck to the wheel, as the case may be. The breadth for measurement shall be to a point which affords good and convenient foot room.

Spaces on deck for first-class passengers, and for all passengers other than those included in the category of deck or third-class passengers are to be measured in a similar manner.

MARKING OF THE SHIP.

The marking of spaces for passengers carried on deck is to include a statement of the number of passengers allowed for each space when there is no deck cargo or other incumbrance on it.

In those cases, however, in which the shipowner desires to receive on the passenger certificate a statement of the whole number of passengers (including saloon passengers as well as third-class or deck passengers) for which there is accommodation on deck when the whole space is free from goods, cargo, cattle, or other incumbrance; that whole number may be stated in one sum; and the various spaces on deck for the accommodation of the various classes of passengers need not be marked. The owners will in this case be left to apportion as they please between the saloon passengers, on the one hand, and the fore cabin or deck passengers, on the other, such of the deck space as may be clear each voyage; subject, however, to the two following conditions, viz., first, that for each passenger carried on deck in excess of the number for whom there is accommodation below, as stated on the certificate (whether he is a saloon passenger or a third-class or deck passenger), there shall be nine square feet of clear space on deck, free from cargo, goods, cattle, luggage, &c.; and secondly, that there shall be efficient shelter, as pointed out below, for one-sixth of the number of the passengers other than saloon passengers at any time carried. The marking of the ship in this case shall consist of one legible notice on deck, painted and placed in a conspicuous spot where it shall be visible *at all times* to the third-class or deck passengers; and it shall state the total number of such passengers authorised by the certificate, and the fact that each such passenger while on board is entitled to nine superficial feet of clear space; and that efficient deck shelter is provided for one-sixth of such passengers.

Saloons and cabins for passengers other than deck or third-class need not be marked in any case.

WATERCLOSETS.

Closets are to be provided for the *exclusive use of deck passengers* in the ratio of three for every two hundred deck passengers allowed by the passenger certificate, and a fair proportion are to be allotted to the sole use of women and children, and so marked outside. Clear passages to these closets must always be maintained. In no case is a less number than two to be provided. These closets should be clean, well lighted, and well drained, and must be of sufficient height and size, and effectually protected from weather and sea. In carrying this regulation into effect there need never be more than six waterclosets set apart for the exclusive use of the deck or third-class passengers, whatever be the number of those passengers, provided there is also one suitable and accessible urinal for the use of male passengers of the deck or third-class.

The cubic contents of waterclosets and urinals erected on deck for the exclusive use of passengers on board home trade steamers under this regulation are not to be included in the ship's tonnage, provided each is permanently and conspicuously marked outside as "Watercloset" or "Urinal," "for Deck Passengers only."

CATTLE.

Under cover.—If cattle are carried under cover on the same level deck as passengers, they are to be separated from the passenger space by a movable *close* bulkhead running athwart ships across the deck and extending from the deck to the covering above, or must be otherwise efficiently separated.

On open deck.—In this case, when they are not under cover, the space occupied by the cattle shall be effectually shut off from the passenger space by bulkheads, wooden partitions, or otherwise. The partitions need not be close; but efficient washboards must be fitted to prevent the dung or urine of the cattle from getting on to the passenger space.

In the hold.—If cattle are carried either in the tween-decks or holds, then the passenger space must be effectually shut off from the cattle space, and separately ventilated, so that no effluvia from the cattle space can escape into the passenger space.

DECK SHELTER.

The aggregate number of passengers other than saloon or first-class passengers, as certified on the passenger certificate in the ratio of one to every nine square feet of the main and weather-deck, the cabin, and other measured spaces, is to be limited to six times the number for which there is clear sheltered space for the voyage; such sheltered space may be, either space in a house on deck; or in a cabin below deck; or under a waterproof turtleback only open at the after end; or in two or more of such spaces.

Spaces, not consisting of a cabin or a deck-house, or a waterproof turtleback, as above mentioned, are not to be deemed to be deck shelter spaces in any steamships unless drawings are submitted and approved by the Board of Trade.

QUARTER-DECKS, POOPS, &c.

Ordinary Home Trade Voyages.—All spaces included on the upper surface of quarter-decks and poops are to be available for measurement, provided that the ship is stable enough, and the sides are either close-boarded or otherwise sufficiently protected; and provided the floor space of the saloon below it is not included in the measurement. If the sides are not close, proper weather-cloths should be provided. But if the owner wishes to include in the measurements so much of the floor of the saloon as is not covered by tables or permanent fittings, then that space may be measured instead of the upper surface of the poop or quarter-deck.

Short Home Trade Voyages.—To meet the case of sea-going vessels making short voyages, that is to say, in those cases in which the time occupied in leaving one port and arriving at the next port does not exceed ten hours, and the vessel is substantial and stable and fully-equipped as a sea-going ship, and is fitted with either substantial bulwarks or sufficient weather-cloths round the poop, raised quarter-deck, or substantial midship-house, then the top surface of the poop, quarter-deck, or house, as well as so much of the space in the cabin below it as is floor space wholly unencumbered by tables, sofas, chairs, seats, &c., &c., may be included in the measurement for passengers.

GENERAL.

The word *deck*, in line four of paragraph 76, means main or weather-deck, poop or quarter-deck, as the case may be, which is measured for saloon passengers. For the future, saloon floors, except as herein mentioned, are never to be measured except by the direct instruction of the Board of Trade.—T. H. FARREB, *Secretary*.—THOMAS GRAY, *Assistant-Secretary, Marine Department*.

In case the owner does not desire the total number of deck or third-class passengers to be stated in one sum in the certificate, and where the marking is not in one legible notice as provided in that case, then these words are to be permanently marked during the time the Passenger Certificate is in force.

<p>The deck from this mark on both sides amidships to the raised quarter deck* contains — square feet, and is certified for — † passengers when not occupied by cattle, animals, cargo, or other incumbrance.</p> <p style="text-align: center;">←</p>	mark	<p>The deck from this mark on both sides amidships to the windlass contains — square feet, and is certified for — † passengers when not occupied by cattle, animals, cargo, or other incumbrance.</p> <p style="text-align: center;">→</p>
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* Or to the poop, or the wheel, or any other part of the deck to which the measurement in question is taken.

† State the number and the class of passengers.

RAISED QUARTER-DECK.

Mark on break of deck.

This quarter-deck contains — square feet, and is certified for —* passengers when not occupied by cattle, animals, cargo, or other incumbrance.

* State number and class of passengers.

POOPS.

Similar to raised quarter-decks.

OFFICIAL INQUIRIES AT HOME, 1878.

(*This List is completed to the 18th of each Month.*)

268. *Somorrostro*, s.s.; iron; built at Cardiff in 1873; tonnage, 458; Bilbao to Cardiff; iron ore; stranded near or on the Armen Rock. Inquiry held at Cardiff, June 29, 1878, before Jones, Stip. Mag. Powell and Jones, N.A. Master cautioned to be more careful in future.

273. *Vermont*, wood; built at Bath, State of Maine, in 1866; owned by Mr. H. T. Ropes, of Liverpool; tonnage, 1236; Cardiff to a port in America; coals; abandoned in the Bay of Biscay, April 1, 1878. Inquiry held at Liverpool, June 6, 1878, before Raffles, J.P. Grant and Wilson, N.A. Court decided that the vessel was not prematurely abandoned. Certificate returned.

279. *City of Dublin*; iron; built at Sunderland, 1873; owned by Messrs. Jalgrave and Murphy, of Dublin; tonnage, 628; Cardiff to Gibraltar; coals; stranded near Baleal, Portugal, April 23, 1878. Inquiry held at Dublin, May 28, 1878, before O'Donnell, Chief Mag. Grant and Curling, N.A. Master reprimanded. First mate in default for not obeying orders. Certificate suspended for four months. Second mate also in default for not making necessary reports to master. Certificate suspended for three months.

282. *Alrune*, s.s.; iron; owned by Mr. G. Peterson and others of Grangemouth; tonnage, 478; Dantzic to London; grain; stranded on the N.W. Coast of Ameland Island, Coast of Holland, April 22, 1878. Inquiry held at Westminster, June 5, 1878, before Rothery, Wreck Commissioner. Pickard and Parfitt, N.A. Casualty attributable to negligence on the part of master in giving a wrong course, thereby allowing his vessel to get too far to the southward. Certificate suspended for six months; recommended for one as mate during that period.

285. *Ida*, barque; wood; built at Portland, New Brunswick, 1852; owned by Mr. J. Moore and others of East Stonehouse; tonnage, 1,009; Gloster to Quebec; ballast; abandoned in Mid-Atlantic, April 5, 1878. Inquiry held at Plymouth, June 8, 1878, before Rothery, Wreck Commissioner. Knox and Jones, N.A. Court decided that master was justified in abandoning the

vessel, and that he had done all in his power to save her before doing so. Certificate returned.

286. *Jane Butcher*, brigantine ; built at Belfast in 1865 ; owned by Mr. Samuel Keitts and others ; tonnage, 177 ; Belfast to Newport ; ballast ; stranded at Breaksea Point, May 25, 1878. Inquiry held at Belfast, June 17, 1878, before Orme, Stip. Mag. Holt and Castle, N.A. Master guilty of careless navigation in neglecting the use of the lead in thick weather. Certificate suspended for three months.

287. *Garland*, wood ; built at Sunderland ; owned by Mr. George Gibson and another ; tonnage, 470 ; the Tyne to London ; coals ; stranded and lost on Gunfleet Sand, May 23, 1878. Inquiry held at South Shields, June 8, 1878, before Yorke, Stip. Mag. Holt and Beasley, N.A. Master guilty of negligent navigation in omitting to take a correct bearing of the Gunfleet light. Certificate suspended for three months ; recommended for one as first mate during such suspension.

288. *Idaho*, s.s. ; iron ; built at Jarrow-on-Tyne, 1869 ; owned by Liverpool and Great Western Steamship Company ; tonnage, 2,177 ; New York to Liverpool ; general cargo and passengers ; stranded and lost on the Coningbeg Rock, June 1, 1878. Inquiry held at Liverpool, June 21, 1878, before Raffles, Stip. Mag. Harris and Grant, N.A. Master in default for proceeding at full speed in a fog, and neglecting to use the lead. Certificate suspended for six months, and recommended for one as chief officer during that period.

289. *Northumberland*, s.s. ; iron ; built at Jarrow in 1853 ; owned by Messrs. Duncan, of Middlesborough ; tonnage, 282 ; Middlesborough to Antwerp ; pig iron ; stranded on the Wolvishart Shoal on the 20th May, 1878. Inquiry held at Middlesborough, before Coleman, Stip. Mag. Aplin and Curling, N.A. Master and mate both guilty of great carelessness, and were severely reprimanded.

291. *Afton*, iron ; owned by Messrs. Barr & Rowen, of Glasgow ; tonnage, 166 ; Newport to Dublin ; sleepers ; stranded on the S.E. toe of the Crow Rock, June 5, 1878. Inquiry held at Swansea, June 25, 1878, before Fowler, Stip. Mag. Powell and Jones, N.A. Master in default for careless navigation, in not consulting

his chart, and depending entirely upon his eye. Certificate suspended for three months.

Sardinian, s.s.; iron; built at Greenock in 1875; owned by Messrs. Allan; tonnage, 2,577; Liverpool to Quebec; general cargo and passengers; explosion of coal gas in the hold, by which four persons were killed, and the vessel seriously damaged and set on fire. Inquiry held at Liverpool, June 27, 1878, before Rothery, Wreck Commissioner. Forster and Wilson, N.A. No charge made against master or officers. Casualty attributable to gases generated in the hold from the newly-worked Welsh coal, and from the absence of proper ventilation by which such gas could have escaped.

OFFICIAL INQUIRIES ABROAD.

Olive, barque; lost at East London. Inquiry held at that port, February 20, 1878. Master justified in beaching the vessel. Master of steam tug to blame for not rendering assistance.

Kaffir, s.s.; lost near Cape Point. Inquiry held at Cape Town, February 25, 1878. Loss attributable to the master's default. Certificate suspended for nine months.

Queensland, s.s.; stranded at Central Island, Fitzroy River. Inquiry held at Rockhampton, February 25, 1878. Master committed an error of judgment. Certificate returned.

Marten, schooner; wrecked on an island of the Abrolhos group. Inquiry held at Geraldton. Master exonerated from blame.

Ponda Chief, barque; stranded at Durban. Inquiry held at that port, March 19, 1878. Master and crew free from blame.

Hunter, s.s.; stranded at the entrance of Port Hacking. Inquiry held at Sydney, March 20, 1878. Master not to blame. Mate's certificate suspended for two months.

Easby, s.s., and *Northern Light*, schooner; in collision near Sydney Heads. The Court found the *Easby* in default, but refrained from awarding any punishment to the master.

Star of the Sea, schooner; lost at the entrance of the Brunswick River. No evidence to found a charge against the master.

Theresina, barque; lost at Durban. Inquiry held at that port, April 9, 1878. Master and crew exonerated from blame.

Ben Nevis, ship ; grounded near the mouth of the Bequa River. Inquiry held at Port Elizabeth, April 12, 1878. Master free from blame. Mate's certificate suspended for two months, and second mate censured.

Ivy, barque ; wrecked near the mouth of the Umtumfuna River. Inquiry held at Durban, April 12, 1878. The Court held that a grave error of judgment was committed by the master, but did not in any way punish him.

Anglo Norman, barque ; stranded on the Goto Islands. Inquiry held at Nagasaki, April 23, 1878. Master absolved from blame.

Rossini, brig ; put into Algoa Bay for repairs, having lost her jibboom and sustained other damage in a gale of wind. The Court held that the master was justified in running for a port of refuge.

Chimborazo, s.s. ; stranded near Point Perpendicular, but afterwards got off. Inquiry held at Sydney, April 25, 1878. Master in default. Certificate suspended for six months.

Sea Spray, brig ; sprung a leak and abandoned when about 25 miles south of Sydney. Inquiry held at Newcastle, N.S.W., April 30, 1878. Master displayed a great want of determination and energy in abandoning the vessel in fine weather and smooth sea ; but, considering that the crew refused to pump, his certificate was returned.

Fire Queen, ship ; lost in Sundai Bay, coast of Japan. Naval Court held at Kanagawa, May 2, 1878. Casualty attributable to the set of the current, which is very unreliable on this coast. Master free from blame.

Phantom, s.s., and *Nell*, s.s. ; collided in Sydney Cove. Inquiry held at Sydney, May 6, 1878. Court found the master of the *Nell* in default, and cautioned him as to his future conduct.

Thomas Albert, brigantine ; lost near North Rock, Bimini. Inquiry held at Nassau, May 6, 1878. Master guilty of an error of judgment in not taking a pilot.

Black Sea, s.s. ; stranded on the Breakwater, at Kertch. Inquiry held at Kertch, June 3, 1878. Master free from blame.

Catherine Scott ; stranded in Algoa Bay. Inquiry held at Port Elizabeth, April 15, 1878. Casualty attributable to defective

cables. Court of opinion that it would have been more creditable if the acting-master had attempted to beat her out. Certificate returned.

Othere, barque; stranded on Barnegat Shoals, New Jersey. Naval Court held at New York, June 5, 1878. Master guilty of neglect of duty. Certificate suspended for six months.

GENERAL.

STOWAGE OF GRAIN CARGOES.—A large meeting of shipmasters was held at Odessa on the 5th July, on board the s.s. *Colombo*, for the purpose of discussing Sections 4 and 15 of the Merchant Shipping Bill, 1878, and also the late decision given at Hull with respect to the "Stowage of Grain Cargoes." Capt. W. M. Young, master of the *Colombo*, in opening the meeting, pointed out the bad effects which Sections 4 and 15 would have if adopted, and showed the injustice of the decision of Mr. Travis in fining a shipmaster for cargo shifting beyond his control, especially considering the fact that as the Board of Trade permits the loading of grain in bulk with the use of shifting boards, and even appoints Surveyors to pass vessels so loaded, shipowners will insist upon it, consequently it was a great injustice to the shipmaster to be fined for what he is permitted to do, it being almost impossible to prevent a grain-laden vessel from taking a list, especially when hove to in a gale of wind. Capt. J. Holman, s.s. *Eclipse*; Capt. Dryden, s.s. *Capella*; Capt. Cumming, s.s. *Abydos*; Capt. Peters, s.s. *St. Andrew*; Capt. Hogg, s.s. *Compton*; Capt. Knott, s.s. *Deronda*, and several others also took part in the proceedings, and resolutions were passed condemning Sections 4 and 15 and protesting against the construction of Section 22 Merchant Shipping Act, 1876, as given at Hull. Nearly all the shipmasters in port were present, and several officers. As this was the first meeting of the kind that had ever been held, and as it proved so successful, it was resolved that similar ship meetings be held as opportunity offers, not only to discuss such important questions as those before the meeting, but subjects which might tend to raise the status of the profession. It was stated that ship-

masters had been too long idle, without protecting themselves, and it was time, under such arbitrary legislation, to act in a body. The resolutions agreed to were drawn up by Capt. Young, signed, and forwarded to the Shipmasters' Societies at London and Sunderland, where other shipmasters can append their signatures.

ASSOCIATION FOR THE REFORM AND CODIFICATION OF THE LAW OF NATIONS.—In connection with the objects of this Association, a Conference will be held at Frankfort on the 20th to the 24th of this month (August). The Conference will hold its sittings at the Saalbau, and the inaugural meeting will take place on Tuesday, the 20th, at 11 a.m. The following are the subjects of the reports, papers, &c., which will be brought before the Conference.

1. *Private International Law.*—Bills of Exchange: Report. Negotiable Securities. The plan of the *lex mercatoria* is the English system as regards negotiable instruments. General average: Report. Patents of Invention. Trade Marks. Copyright. Bankruptcy: Report. Foreign judgments: Report. On the desirability of establishing a uniform practice for taking evidence: Foreign Tribunals in different countries.

2. *Public International Law.*—The first Rule of the Declaration of Paris. Codification of International Law. Extradition of criminals. The limits to arbitration for the settlement of international disputes. The Law of Maritime Capture. The first Article of the Treaty of Washington. The rights and duties of neutrals. Collisions at sea. Conventions for the relief of shipwrecked mariners. International Tribunals of Egypt.

Communications should be addressed to the Honorary Secretaries at 33, Chancery Lane, London. All letters for Frankfort should be addressed to Dr. Juris H. Oswalt, the Honorary Secretary of the Local Committee.

TRANSATLANTIC LINES AND STEAMERS.—In Table No. 5 of the article on Transatlantic Lines and Steamers in our July number it is stated that the *Georgia*, wrecked on Sable Island, August 4, 1863, belonged to the National Line. We find that this steamer never belonged to the National Company, and therefore hasten to correct the mistake.—ED. N. M.

INCORRECT CHARTS.—We call the earnest attention of our readers to the following:—The Report of the Inquiry held on the 24th and 25th June, 1875, at Newcastle, into the stranding of the s.s. *Joseph Straker*, recommended that all ships leaving British ports should have a notice attached to the clearance papers of the alteration in the position and character of any light or beacon in the vicinity of the port for which the ship may be bound or which may be passed in the voyage. On this, as most of our readers are aware, the Board of Trade, on the 2nd August, 1875, addressed a letter to the Local Marine Boards, Lloyd's, and various Ship-owners Associations, calling their attention to the frequent cases of marine disaster from incorrectness or absence of charts, and in May, 1876, the Board issued a printed advertisement in which they called the serious attention of owners of ships, to the necessity of seeing that charts are sufficient in number and correct to date. Charts are as much an "equipment" within the meaning of the Act as are chronometers and compasses, and our object in adding to our repeated warnings on this subject is that shipowners may place themselves in the right before the Courts of Inquiry, and not find themselves liable to costs or criminal proceedings for sending ships to sea without sufficient charts. An owner who does so send a ship to sea is under the Act liable to fine and imprisonment for not providing proper equipments. It is better that he should go to the trouble of taking steps to secure the best and latest charts, or that he should directly pay some one to see that the charts and sailing directions supplied are corrected to the latest date, than that there should be any question when a ship is lost, whether he did or did not take the steps which he ought to have taken, alike in the interests of property, life, and duty. To clear an owner from imputations it is not sufficient that the master is expected to find charts. The salaries sometimes paid to masters are such that the possibility of their finding correct charts is out of the question. Indeed, in one instance a Court of Inquiry called attention to this very point. It is by some owners neglecting these obvious precautions for the paltry saving of a few shillings, that agitators think they obtain a handle for attacking the whole body.

CLIMATE OF CYPRUS.—In 1866, the Scottish Meteorological Society established one of its foreign climatological stations at Cyprus, where, for about four years, observations were made by Mr. J. B. Sandwith, Her Majesty's Vice-Consul, and the results regularly published in the Society's *Journal*. Summarising these results, we learn that the annual rainfall is about 14 inches, nearly the whole of which falls from November to April, notably in November and December, that no rain falls in June, July, and August, and but in trifling amounts occurring rarely in May and September. There are thus practically five rainless months in the year in Cyprus, a feature in its climate common to the climates of the Mediterranean regions south of latitude 43°. Comparing it with the coasts of Syria opposite, its winters are milder and its summers cooler. The decidedly insular character of its climate is further apparent from the fact that the coldest month is February, with a mean temperature of 52° 8', being about equal to that of London in the middle of May, and that the mean temperature of August is nearly as high as that of July, both being about 81°, which is approximately the summer temperature of Algiers, Alexandria, Athens, and Constantinople. During these four years, the highest recorded temperature of any of the months was 96° except June, 1869, when, from the 21st to the 24th, the mean temperature at Alethriko, 8½ miles inland from Larnaka, reached 95° 5', being about the average summer temperature of the Punjab, rising on one of these days to a maximum of 105°. On the same day the temperature rose to 100° at Larnaka, and to 103° 5' at Jerusalem, 2,500 feet above the sea, the period being characterised as one of unprecedented heat and drought over the whole of the regions bordering the Levant.—*Nature*.

THE SHIPMASTERS' SOCIETY.

THE Second Annual General Meeting of this Society was held on the 17th June last. From the statements made, it appeared that the number of members had increased to 324, and that the balance-sheet showed an amount of about £200 to the credit of the Society. It

gives us much satisfaction to be able to chronicle the continued prosperity of this valuable institution and its survival of what may be termed the "croaking" stage.

The Chairman, Captain H. B. Benson, put before the meeting what had been the work of the Society during the past year. He alluded to the action taken in connection with the cases of the *Aros Bay*, the *Avalanche* and *Forest* collision, the *Richmond*, the *Danaë*, and the *Crownthorpe*; also to the Society having been consulted by the Trinity House Corporation in regard to the marking of Cape Guardafui; also to the lectures which had been delivered at the Society's Rooms by Sir William Thomson and Captain Colomb, R.N.; and further as to what had been done by the Society in reference to the Merchant Seamen Bill in Parliament. The record is, without doubt, an encouraging one for the Society, but we would suggest to Captain Benson that, in speaking publicly on the subject of marine inquiries it would be well to bear in mind that it is not the Board of Trade which pronounces judgment in such cases; this is the function of the Court established for such purposes, and all the Board of Trade does in the matter is to set the Court in action. This is a common misapprehension of the powers of the Board of Trade, and we are sure Captain Benson will be glad to have his error pointed out to him.

The meeting was also asked to sanction some alterations in the Rules as follows:—

1. To render eligible for election as members, masters who hold certificates from the Board of Trade, or from the Government of any of the British colonies.

2. To reduce the subscription of honorary members to one guinea.

3. To alter the words in Rule 8, "shall be expelled" to "shall cease to participate in the benefits of the Society."

Each of these propositions was unanimously agreed to, and at an Extraordinary General Meeting held on July 1st, they were unanimously confirmed.

We have no hesitation in saying that the success attending these meetings, and the onward progress of the Society, are due mainly to the very devoted exertions of the Committee and their Chairman, and the untiring energy of their Secretary, Mr. Benedict F. Cramer.

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CONTRACTS BETWEEN SHIPOWNERS AND SEAMEN.

THE question as to how far the contracts made between shipowners and seamen may be left untrammelled by any special enactments is one which has of late received a considerable amount of attention. That the law should abstain to the utmost possible extent from interference between employers and employed, and that capital and labour should be allowed, wherever possible, to settle their own differences, are principles which have long since been established upon the most unquestionable foundations. There is no necessity at the present day to argue in favour of absolute freedom in these matters, for the proposition that such freedom is generally desirable has come to be looked upon as self-evident; and the only point now to be considered is to what extent the principle here indicated requires qualification.

During the last year or two we have heard a great deal about "freedom of contract" in connection with shipowners and seamen. The phrase is one which sounds well certainly, but it may be questioned whether its meaning has always been thoroughly understood by those by whom it has been most used. We must

not forget that circumstances alter cases, and that theories which attract us by their simplicity have frequently to give way before the unyielding logic of facts. Freedom of contract is no doubt a desirable thing—as a general rule—but it is not always desirable, for there are many cases in which freedom can be permitted only to a certain point. Men may be allowed to make their own contracts, but occasionally they must be compelled to make them subject to conditions the very reverse of free. The British Army and Navy, for example, are formed of men who have enlisted voluntarily, but their enlistment takes place subject to conditions which no soldier or seaman can modify, or from which he can subsequently free himself. And it is quite evident that such must necessarily be the case. Parliament reserves to itself the right of revoking these special conditions, by making them binding for periods of twelve months only, well knowing that it can at any time break up either the Army or Navy by simply refusing to pass the Mutiny Acts by which these forces are maintained, and thus rendering the contracts “free.” It is clear, therefore, that in some cases, “freedom of contract” is a thing which special measures must be taken to avoid. And it is equally apparent that in many points there is a close resemblance between enlistment in the Army or Navy, and signing the articles of a merchant ship. This similarity is clearly indicated by the special legislation with which it has been found necessary to surround contracts made between shipowners or shipmasters and seamen, in all countries possessing merchant ships. The term “freedom of contract,” when used in any discussion relating to agreements made by seamen, is altogether a misnomer, for there neither is, nor can be, such freedom. If the master of a ship engaged his crew, as an employer engages workmen, and subject only to the conditions which govern ordinary engagements on shore, he would find himself in a somewhat embarrassing position if, in the middle of the voyage, his hands gave him notice that they wished to bring their contract to a close. In short, it is sufficient to state such a case to show the absurdity of dragging “freedom of contract” into the question at all.

Apart from any mere abstract considerations of the kind above

referred to, however, there seems to be a growing desire to assimilate in certain respects the terms of contracts made for service afloat to those which surround the usual agreements made between masters and workmen on shore. Strong appeals have been made in favour of abolishing the exceptional conditions under which seamen's wages are at present paid; while the proposed new Merchant Shipping Bill appears to have been framed with a view to the immediate introduction of radical changes in the direction here indicated.

It has been maintained in the first place that the seaman owes no small portion of his misfortunes to the system which permits his employer to retain the whole of his earnings until the end of the engagement, and then to send him on shore with many months', or possibly a couple of years', wages in his pockets. Doubtless this is an evil, but where is the remedy? If the seaman's wages were paid each month, it would be impossible to keep a crew together in many ports, for the retention of a large balance of the amount due as wages often constitutes the only means by which the master prevents desertion. A system of monthly payments has been adopted in the Royal Navy, it is true, without producing any inconvenience, but then it must be remembered that the man-of-war's man is very differently situated to his cousin of the merchant service. He has a Government Savings' Bank at hand in which he can deposit his earnings, and if he can be induced to open an account in this, there is little chance of his deserting; for the knowledge that he is certain to forfeit the amount standing to his credit by running away is in itself sufficient to prevent him from taking French leave. It is quite clear that a system of this kind can never be introduced in the merchant service, and it is idle to suppose that men who come ashore in this country and spend the wages of a whole voyage in stupid debauchery, would not be certain to go ashore in an Australian port, for example, and spend the wages of half a voyage in a similar manner, if they had the chance. However, it is unnecessary to touch upon these considerations at any great length at present. There is little likelihood that any change will be made in the direction of more frequent payments. Those who have argued in favour of such a system

have doubtless done so with the best intentions, but until they have made some show of meeting the main objection to their scheme, by devising new means for preventing desertion, there is not much chance of their views being adopted.

What is of far greater importance to shipowners, at the present time, than the proposal above referred to, is the principle laid down in the fourth, sixth, and eighth sections of the new Merchant Shipping Bill which will again be brought before Parliament next Session. By the fourth section it is proposed to enact that "until a seaman, or apprentice to the sea service, engaged in the United Kingdom, has joined his ship or begun work in pursuance of his engagement, the Employers and Workmen Act, 1875, and the Conspiracy and Protection of Property Act, 1875, shall apply to him as if he were a workman or apprentice within the meaning of those Acts respectively." In other words, it proposes that if any seaman, after signing the ship's articles, and before commencing work, should repent of his bargain, and break his engagement, he will be able to do so without running any of the serious risks which he would have to incur under the present system. A seaman who fails to join his ship after signing the articles, is at present, as most of our readers are doubtless aware, liable to arrest without warrant and to summary conviction, but if the above section should become law, he will be at full liberty to decline to carry out his share of the contract until it has been decided by a Court of Law that he must do so. And if, when before the Court, he declares that he is willing to hold to his bargain, he can give such security for the performance of his contract as the Court may require (but not exceeding ten pounds), and join his ship; but if he is unwilling to do so, the Court may consider the merits of the case, and either inflict a fine or annul the contract, as it may think proper. An important exception to this arrangement is made, however, by the sixth clause, which provides that when a seaman "has received *money* from his employers on account of wages payable under an agreement, and before repayment thereof, wilfully and without reasonable cause refuses or neglects to perform the agreement in respect of which the *money* was paid, he shall be liable, on summary conviction, to be imprisoned for any period not exceeding

six weeks,* with or without hard labour." The actual drift of these clauses is no doubt the abolition of advance notes, and it is perfectly certain that on the day on which the proposed sections become law the advance note will disappear as if by enchantment. Two years since, when it was proposed to abolish the advance-note system, shipowners cried out for liberty to make free contracts, and to advance wages to seamen when they thought fit; the new Bill gives them liberty *ad libitum*, or possibly *ad nauseam*. It makes no direct attack on advance notes; it does not even refer to them indirectly. Shipowners will still be able to make advances by notes if they wish to do so; but it is tolerably certain that, under the new order of things, such notes will rarely, if ever, be used. Advances, in future, must be made in cash, or they will not have the effect of rendering the seaman liable to imprisonment on summary conviction. The man who has accepted a note only will be in the same position as he who has received nothing. It will be open to him to cry off the bargain he has made, leaving it to a Court of Law to decide whether he must carry out his contract; and it is clear that, under these conditions, the power of the crimp will entirely disappear. The crimp will no longer be able to run his clients on board, as he can at present, and, as a natural consequence, he will be compelled to bring the discounting portion of his business to a close. The new Bill directly encourages cash advances, by placing men who accept them at once under liability to summary conviction and imprisonment; but the advance note it sweeps clean out of existence, and this without apparently touching it.

Having regard only for the welfare of the seaman, it cannot be questioned that the contemplated change is well calculated to meet a great and crying evil. But at the same time it must be remembered that other considerations—perhaps not less important than the removal of temptations from the seaman—are involved in the proposed amendment of the law. As a means of abolishing the advance-note system, the clauses above mentioned are most skilfully

* Under the present law the term of imprisonment for refusing to join is ten weeks.

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* Under the present law the term of imprisonment for refusing to join is ten weeks.

framed, the opponents of reform having been hoist with their own petard; but it remains now to be considered whether the price to be paid for the change is not somewhat too high.

The eighth clause defines the conditions under which the seaman may be arrested without warrant. These are—(1) That he has “joined his ship or begun work;” (2) That “the ship has finally cleared outwards for the voyage,” or that she “has left her final port of departure for the voyage, whichever first happens.” It has already been pointed out in these pages that this provision really amounts to very little. Seamen are not in the habit of deserting in the United Kingdom when once they have commenced work, or when the ship has cleared outwards. The difficulties with the crew arise, almost invariably, immediately before the ship clears and leaves her final port of departure, and it rarely happens that men go on board unless they intend to remain. Under the proposed new law the seaman who has signed articles will be perfectly free until he has joined his ship and she has cleared outwards, or left her final port of departure. In other words, signing the articles and making an agreement is in future to mean nothing more than a harmless piece of formality, a kind of memorandum showing when the pay will commence should the undertaking be carried into effect.

That the change involved in the proposed amendment of the law is one of very grave importance, will at once be recognised by all persons who are practically acquainted with the operation of getting a crew together and clearing a ship from port. At present, even with the terrors of summary arrest, the aid of the crimp, and ten weeks’ hard labour at his disposal, the master often experiences the utmost difficulty in collecting his hands; frequently the ship is delayed a day or two beyond her proper time for sailing, and when she at last gets away, in many cases it is with a short complement of crew. Now the law is to be revolutionized; the crew are to have full option of refusing to go to sea, and if hands should happen to be short in the port where the vessel is lying, the master’s only alternative will be to appeal to a Court of Law to decide whether his men shall *give security* for the due performance of their contracts. What would

be the exact value of a security for ten pounds, given by a seaman without any fixed residence, and whose only property consisted of the clothes on his back, it would be difficult to say, but it is on this security that the master would have to rely as the means of getting his ship to sea if the hands decline to join. At the same time, it must not be forgotten that the suppression of the note system will have removed a fertile source of desertion and failure to join ship. The temptation to desert, which exists under the present system, will in a great measure be removed, but when we further bear in mind that there is a complete absence of any feeling of common interest between shipowners and seamen—that both parties to the agreement are generally complete strangers to each other—the owner looking upon the “hands” as so many units who are to work his ship out and home, and the “hands,” in return, regarding the owner as a kind of wage-producing non-entity of whom advantage should be taken on every possible occasion—it is easy to see there is grave risk that the proposed alteration of the law will bring about serious inconveniences. As an illustration of the evils which, in our opinion, may fairly be anticipated under the new system, we will suppose that the master of a sailing ship engages a crew at £3 15s. per month, the ship to sail on the high tide, say at three in the afternoon, the men to be all on board on the morning of the day of sailing. The men would perhaps come alongside at the proper time, but instead of commencing work, they might tell the master that they had changed their minds on the question of wages, and could not think of accepting less than £4 per month. What is the master to do in such a case? He has two alternatives—he can delay his ship for a day or two (and perhaps lose a fair wind) in order to obtain security from the men that they will join, or he might pay the increased demand. Possibly he might dismiss the whole crew, and engage a fresh one, but if he did so he would still be liable to a similar inconvenience.

Under the proposed system seamen will run no risk whatever in declining to join. The new Bill proposes to place the “Conspiracy and Protection of Property Act,” at the disposal of the owner for the punishment of refractory crews, it is

true, but this will be of very little use in the great majority of cases. The only section of this Act which could be applied to seamen is that which renders a man liable to punishment who "breaks a contract either alone or in combination with others," so as to "expose valuable property, whether real or personal, to destruction or serious injury." It is quite clear that the refusal of seamen to join their ship would rarely have this effect. Except in the case of a vessel with a perishable cargo, a detention caused in this way, even if it lasted for a month, would expose no property to injury; indeed the crew might reasonably argue that the ship was safer in port than at sea.

We have not a word of regret to say in regard to the probable disappearance of the advance note, but at the same time we feel bound to express our opinion that the means proposed to be taken for its abolition are of somewhat doubtful utility. We should have preferred to see the question of advances dealt with on its own merits, rather than approached by the questionable expedient of classing contracts made by seamen under the same category as contracts made between workmen ashore and their employers. The circumstances surrounding the engagements made by seamen, are so widely different to those which govern ordinary contracts on shore, that no parallel can be drawn between the two cases, and a law that may work satisfactorily in one instance, may produce great inconvenience in the other. If a number of workmen ashore decline to fulfil their agreements, for example, their employer can generally make shift to carry on his business with the hands who remain, until he has either settled his difference with the absentees, or filled their places with other men. But the shipowner cannot do this. If five hands out of fifteen refuse to join, the ship cannot sail; she must wait until the crew is complete. The ten men who have gone on board must be paid for doing nothing, while the vessel must remain in port until the master has succeeded in finding substitutes to take the places of the men who refuse to join. In sailing ships a delay of this kind would often mean the loss of a fair wind, and would consequently entail either an indefinite stay in port, or the expense of a steam-tug. The new Bill places the shipowner entirely at the

mercy of the crew. It gives the seaman every opportunity of making extortionate demands, at the eleventh hour, with absolute impunity from risk. The very worst that can happen to him in consequence of his refusal to join his ship will be an appearance before a County Court, and, if the Court should decide against him, he will merely have to express his willingness to go on board, and as far as he is concerned all will then be well. Under such a system as this, the master will be utterly powerless until he can induce the men to commence work. And, as regards the question of putting to sea, the crew will be masters of the situation, for the new law will give them the option of deciding whether a ship shall sail at a given time or not. If seamen do not take advantage of the weapons which, on the passing of the proposed Bill, will lie at their disposal, we shall feel compelled to admit that we have been completely mistaken in our view of the situation. If they do not make extravagant demands when they can do so, both with impunity and with every chance of success, they will certainly deserve great credit for their forbearance, for there is certainly no other class of men who would make a similar display of virtue under such circumstances.


When it was decided during the recent Session of Parliament to refer the new Bill to a Select Committee, we fully anticipated a considerable modification of its provisions so far as the sections above referred to are concerned. We regret to see, however, that the draft Bill as amended by the Committee, leaves the points in question still untouched, and looking to the general tenour of the evidence given before the Committee we must admit that we are somewhat surprised at the result of their labours. Of nineteen witnesses who were examined with regard to the advisability of retaining the fourth section as part of the Bill, no less than fifteen gave adverse opinions. The four witnesses who were in favour of abolishing the present system of arrest without warrant were Mr. Davis, Secretary to the Plimsoll Seamen's Defence Association; Mr. Commins, Barrister-at-law; Mr. Fyfe, commission agent and broker; and Mr. Moore, manufacturer. Among the majority are the representatives of both the Liverpool and London Shipowners' Associations; Mr. Raffles, the stipendiary magistrate for Liverpool;

Mr. Hanmer, Secretary to the Liverpool Sailors' Home; Commander Dawson, R.N., Captain Toynbee, Mr. Lemon, president of the Amalgamated Society of British Seamen, and several other gentlemen whose opinions appear to us to be entitled to quite as much weight as those of the four who compose the minority. On reading the evidence and looking to the result, it is impossible to avoid the conclusion that the majority of the members of the Committee had fully made up their minds on the point before they heard what any of the witnesses had to say, and it is quiet clear that if their decision, like that of a jury, had to be submitted to a Court of Appeal, the verdict would be quashed on the ground that it was given against the weight of evidence. Whether the majority will be able to satisfy the House of Commons as to the soundness of their views remains to be seen. It is a noteworthy fact that the majority who succeeded in forcing the fourth clause through the Committee was a very small one; for on the division whether this clause should stand part of the Bill there were only 10 Ayes to 8 Noes.

The last few years have seen many rash experiments made, and still wilder schemes for experiments proposed, in connection with our Mercantile Marine; but among all these schemes and propositions it may be questioned whether there are any that would be productive of such immediate practical inconvenience as the total abolition of arrest without warrant in the case of seamen who have signed articles, but who fail to join their ships. The proposed law intends to encourage cash advances in the place of the present note system, ignoring the fact that cash advances are sheer impossibilities amid the conditions under which the great bulk of our seamen are engaged; while it leaves the shipowner and shipmaster, as a means of enforcing the contracts they have made with seamen, nothing but two Acts of Parliament, one which there would be neither time nor opportunity to enforce, and another which could rarely be applied, even if its application were attempted. The amendment of the law contemplated in the sections above quoted, may not be fraught with such vital consequences to the Mercantile Marine, as some of the propositions which have recently been brought before the country; but that it will entail very serious practical inconvenience, if carried into

effect, it is impossible to doubt ; and it seems to us to be the duty of those who are in favour of abolishing the existing system, to bring forward at least some amount of evidence in support of their views from persons practically acquainted with the subject, before they carry their ideas into effect. This they have not yet done. The vital principle of the proposed new Act is undoubtedly contained in its fourth and eighth clauses, and as we have just pointed out, the evidence given before the Special Committee against these clauses is literally overwhelming. What the Government will do under the circumstances remains yet to be seen, but it is quite clear that if the question is to be fairly dealt with, Parliament will require a considerable amount of " education " before the new Bill can become law.

COAL-GAS EXPLOSIONS.

T is often said that " a little knowledge is a dangerous thing." This old saying may be true to a certain extent, but we are certainly disposed to think that, however dangerous a little knowledge may be to some persons, a total want of it is infinitely more dangerous, and that there is more truth in the maxim " mankind perisheth for lack of knowledge." The recent enquiry into the explosion on board the *Sardinian* brings this fact forcibly before our minds, and clearly shows how deficient the great mass of the public are in a knowledge of the most elementary facts of science. We propose, therefore, to devote a short space in considering the well-known causes of these explosions, and we trust our readers will excuse us, if we go over ground and elucidate elementary facts that should in the present day be well known to the frequenters of even an ordinary Board School.

Coal-gas consists of a mixture of various gases, the chief of which is called in popular language fire-damp, and in scientific language carburetted hydrogen. There are two varieties of

carburetted hydrogen in coal-gas, one called heavy carburetted hydrogen or olefiant gas, and the other light carburetted hydrogen or fire-damp, and they both consist simply of carbon and hydrogen but in different proportions. It is the light carburetted hydrogen or fire-damp that is given off from the surface of coals, and is the cause of those fearful catastrophes which frequently occur in mines and on board ship. Now, if this fire-damp be ignited it will burn with a pale blue flame and no explosion will take place, in fact miners frequently mistake it for burning sulphur on account of the blue flame. If, however, it be mixed with about eight parts of atmospheric air and a light introduced, a terrific explosion will be the result. This can be easily shown by mixing a little ordinary illuminating gas with air, and exploding it in a glass vessel or in a bladder; that in the glass vessel will explode harmlessly since there is a free escape for the gases found, but the bladder will be blown into ribands. When this fire-damp is either burnt or exploded, water and carbonic acid are the products formed. Thus it frequently happens when an explosion takes place in a mine the unfortunate men who escape being burnt to death are suffocated by the carbonic acid or choke-damp formed.

It is not exactly known in what condition fire-damp exists in the coal itself, but it is known to exist in a high state of tension. Some varieties of coal contain much more than others, thus cannel coal contains a very large quantity and will burn with a bright flame, being in fact the coal from which our illuminating gas is obtained, whilst anthracite coal contains scarcely any at all, being almost pure carbon. Between these two extremes there are many varieties containing more or less, but those which are most sought after for general consumption as a rule contain large quantities. Hence, it generally happens that the fiery seams as they are called are the most wrought, and that particular pits have a succession of explosions in them. It will generally be found that they do not originate promiscuously in mining districts, but almost always in mines already distinguished by previous disaster. Thus a coal mine, more especially one of a fiery nature, may be considered to be a kind of natural gasometer, the gas being perpetually given off;

and this gas mixing with the air forms, if sufficiently concentrated, a dangerous mixture which needs but the introduction of a naked light to explode with fearful violence. In a precisely analogous manner explosions often take place in cellars and rooms where gas has escaped, and every jet of gas that we see is an illustration of the fearful fires that slumber in coal mines. It has been found that explosions occur most frequently when the barometer is low, and this may be accounted for by the fact that, the atmospheric pressure being less, the gas escapes the more readily. In coal mines, moreover, any sudden change of temperature will interfere with the proper circulation of air within the pit.

Coal which has been removed from mines will still continue to emit gas in a greater or less degree, and there is therefore the same danger to be apprehended when it is stored in large quantities on board ship, more especially if it be transferred without being exposed at least seven or eight days to the atmosphere. If coal be much broken, gas will be evolved in large quantities from the rupture of the cells which confine it; hence, therefore, in rough weather when the ship rolls much the liability to explosions is greater, and more care should be taken. Not only will coal-gas form this dangerous mixture when mixed with air, but it has been found that very fine coal dust if sufficiently concentrated will do the same thing. This, however, is a contingency hardly likely to arise on board ship, except perhaps immediately after loading.

It fortunately happens that the fire-damp mixture has an exceedingly high kindling point. It requires a white heat to ignite it; a red heat has no effect. Hence the invention of the Davy Safety Lamp, which consists simply of an ordinary oil-lamp, enclosed in a cylinder of very fine gauze, of which the apertures should not be less than 480 to a square inch of surface. By this means the flame is so cooled by the conducting power of the gauze, that it will not pass through the apertures, and it may be observed when taking this lamp into an explosive atmosphere that, though the carburetted hydrogen may enter the cage and burn with sufficient energy to heat the metallic tissue to dull redness, the flame is never communicated outside. By means of this lamp

not only is it possible to enter a dangerous mine with safety, but a valuable test is afforded of the condition of the atmosphere. When much fire-damp is present the flame is first elongated, and burns more dimly till it may be quite extinguished, whilst the interior of the cylinder becomes filled with the burning mixture of gas and air; when the atmosphere becomes purer the wick is again relighted. This Davy Lamp then, may be considered as affording a sufficient safeguard under all ordinary circumstances, though it must not be thought to be absolutely so. Thus, a great rush of gas might fill the interior with such a fierce flame as to melt the wires, but these instances are rare. There is no earthly reason why this lamp should not be used on board ship, especially on colliers as well as in mines.

Fire-damp, being considerably lighter than common air, naturally accumulates towards the top, either of mines or of the ship's hold, and it is therefore perfectly obvious that the way to get rid of it is simply to provide a few holes whereby it may escape. This appears such a plain and natural conclusion that it may appear marvellous that any doubt should exist on the subject, yet some people have declared that they don't consider ventilation necessary. It is, however, very probable that this may be accounted for by some confusion of ideas respecting the conditions which favour explosions and those which tend to spontaneous combustion. It cannot be too strongly impressed on the mind that the two conditions are entirely antagonistic. We have already dwelt on the conditions which tend to explosions, and we will now say a few words on spontaneous combustion.

Spontaneous combustion is due to the combination of certain elements of the coal with the oxygen of the air, to what is called oxidation or slow burning, for the same process takes place though much more rapidly in a fire. It is moreover very similar to what occurs in the human body, where the elements of the food enter into combination with the air we breathe, and the near temperature of the body is preserved. To enter a little more into detail, spontaneous combustion may be traced to three causes:—First of all, to the presence of pyrites or sulphuret of iron, which exists more or less in all coal; thus, pyrites has a strong tendency to

oxidise, and in so doing to produce heat. Second, to the property which carbon in a porous state has to absorb or condense oxygen, which condensation is also attended by the development of heat. Third, the particles of carbon and hydrogen in coal, will more readily combine with oxygen when it meets with it in this condensed state. The production of heat from these three causes may thus simultaneously proceed to such an extent as to raise the temperature to the point of ignition of the carbon particles, and a fire is the result. Ventilation, therefore, instead of preventing spontaneous combustion, has a tendency to increase the liability by bringing the coal into contact with an increased supply of oxygen. This applies however, more especially to what is called through ventilation, where the air is brought into contact with the mass of the coal. The system of through ventilation is entirely wrong, for not only is it likely to increase the danger of spontaneous combustion, but seeing that, as previously mentioned, fire-damp requires a large admixture of air to make it explosive, the production of this dangerous mixture in the immediate vicinity of the coal would also be favoured, and explosions therefore be rendered more probable. All that is required is a sufficient number of openings to allow of the escape of the gas, which being light will always find its way to the top. It is not safe to rely solely on hatches which have to be battened down in bad weather, but there should always be a number of shafts piercing the upper deck, but not carried through the body of the coals. These shafts should be fitted with cowlheads, as in the ordinary ventilation of passenger decks. If these simple measures were always attended to, explosions from coal-gas on board ship would be rendered impossible.

CYPRUS AND SOKOTRA.

IN view of the action recently taken by H.M. Government in connection with the Islands of Cyprus and Sokotra, we publish a summary of the hydrographical features of each island, compiled from the best authorities.

C Y P R U S .

The Island of Cyprus lies between lat. $34^{\circ} 33\frac{1}{2}'$ and $35^{\circ} 41\frac{1}{2}'$ N., and between long. $32^{\circ} 15\frac{1}{2}'$ and $34^{\circ} 36'$ E., at the eastern end of the Mediterranean, and about 60 miles from the nearest part of the Syrian coast. It extends E.N.E. and W.S.W. about 124 miles, and is 46 miles wide in its broadest part, but its north-eastern part is a tapering mountainous peninsula 38 miles long, and from 3 to 8 miles wide.

The whole extent of the north coast is a mountain range with peaks varying in altitude from 1,500 to 3,340 feet, with minor ridges running down to the sea. The west and S.W. parts of the island are also mountainous, but not continuously so; here ridges extend west, S.W., and south from lofty inland peaks, from Oros Troados (the ancient Olympus), 6,590 feet high; from Mount Adelphe, 5,380 feet high; from Oros Stavro (Hill of the Holy Cross), 2,300 feet high; and from a peak between the last two, which attains an elevation of 4,730 feet. Elsewhere, as between the south-westerly ridges and between the south-westerly and northern ranges, are several plains, the largest of which (Messaria plain) stretches across the island from east to west, with an average breadth of 18 to 20 miles.

The mountains are generally well wooded (chiefly pine and wild cypress), and much firewood is collected from them to be carried to Alexandria. Great forests must have formerly covered a large part of the south of the island, but with the disappearance of these, and the spread of the salt lagoons and marshes along the coast, and inland, between Episkopi bay and Salamis, came fever and ague. The climate is an eastern one, and no worse

than that of other Mediterranean islands ; with the destruction of the forests have come droughts ; and the malaria from the undrained marshes, during the heats of summer, produce fevers, but they are not fatal, though inconvenient ; drainage will eventually dissipate these, and in the meantime they may be mitigated, if not wholly avoided, by eating and drinking proper food, and avoiding exposure to the night dews. Good sanatoria may well be established in the mountains. The climate may not be wholly good, but there is nothing in it to produce the pestilential and yellow fevers that decimate the inhabitants of large tracts of America.

Spring, especially April, is delightful, and September is the worst month. The mean annual rainfall is 14 inches, nearly the whole of which falls from November to April, chiefly in November and December. No rain falls in June, July and August, and but little (if ever) in May and September ; so that there are five rainless months. Compared with the coast of Syria, the winters are milder, and the summers cooler in Cyprus : the coldest month is February, with a mean temperature of 53° ; the mean temperature of July and August is 81° ; but on extremely hot days 90° to 100° has been registered at Larnaka and its vicinity ; but it has then been much hotter on the neighbouring continent ; and is often hotter in parts of India.

Winds and Weather.—Admiral Smyth in his memoir on “ The Mediterranean ” says :—“ The island of Cyprus affords an epitome of the usual Levantine weather, as the action of the breezes is confined to a comparatively circumscribed space. In the general progress of its seasons, the heats increase as the summer advances, and would be altogether insupportable were it not for the cooling *imbatto* (or regular land and sea breeze), which begins to blow at 8 a.m. the first day of the season, increases as the sun advances till noon, when it gradually declines, and at 3 p.m. entirely ceases. Nothing is more easy to comprehend than the cause and course of this wind : between 8 and 10 a.m. the land is sufficiently heated to rarify the atmosphere over it greatly, the cool air upon the sea consequently expands and forms a strong current to the land. Towards sunset, the sea being thus heated, something like

an equilibrium takes place. About an hour after sunset, the *imbatto* generally dies away ; an almost dead calm ensues, and at about 1 or 2 a.m. a light air springs up from the land, which continues for about an hour after sunrise. But before these winds terminate for the season, they become extremely violent. This *imbatto* is considered as a sea breeze on the north-west of Cyprus, and a land breeze on the south-east. The falling of the wind is usually succeeded by moisture, which renders the air somewhat heavy, but it is dissipated in the evening by a breeze springing up daily at that time. In summer this wind blows till four in the morning, in autumn and winter not till daybreak, while in spring it does not continue longer than midnight."

"Those winds which arise in the beginning of summer, cease about the middle of September, and this is the period of the most intense heats, there being no breeze to attenuate them. Fortunately, however, they are not of long duration. About the middle of October they sensibly decrease, as the atmosphere then begins to be freighted with watery clouds."

The north winds, though possessed of some good characteristics, are disagreeable in summer, on account of the injury they inflict on the cotton plants, which are sometimes withered thereby to the very roots ; and coming from the high mountains of Asia Minor, they are often very cold. But the principal cause of failure in the crops of Cyprus is drought, for the earth is often parched up, as it were, from the end of April till the middle of October.

Productions and Commerce.—The soil of the plains of Cyprus is excellent, and even under imperfect cultivation yields much wheat, barley, wine, oil, and fruits. The chief exports are silk, cotton, wool, wine, morocco leather, soda, salt, coloquintida, gum, locust beans, laudanum, madder, cochineal, turpentine, tar, various pigments, and firewood. The best wine comes from the vicinity of Limasol, and cotton from the north part of the island. Cattle, sheep, pigs, goats, and poultry are very abundant, and these are sometimes exported.

No gold, quicksilver, nor coal is found on the island, but iron is said to exist in large quantities.

The capital, Leukosia, or Nikosia, is near the centre of the

island, on a low, moist, rich, and extended plain. Once it had a large population, but it probably does not contain 10,000 people now. There are some high hills around it.

Cyprus possesses no harbours, only roadsteads, or anchorages in open bays. These are described further on. In respect to anchorages it is neither better nor worse than our Indian possessions, where there are chiefly roadsteads, and good ground tackle only is required.

From Cape Arnauti (the north-west end of Cyprus) to Cape Bianco, the coast, for a distance of nearly 45 miles, trends first S.S.E. and then south-eastward; where not high and cliffy, which much of it is, it forms in low sandy and stony beaches, fronted by rocks and sunken ledges, with foul ground extending in many places from half-a-mile to a mile farther out. Here and there are open and exposed sandy bays or bights which afford summer anchorage to the small native craft. The coast is, however, completely open to westward and S.W., and presents generally a most forbidding aspect, with a heavy sea almost always breaking on the reefs and ledges.

PAPHO.—On the coast just described, in lat. $34^{\circ} 45'$, is Papho or Baffo, an insignificant port formed by two moles; but it is now choked up, having 4 to 8 feet water at the entrance, and 10 to 12 feet inside; small native vessels find shelter here, except in S.E. gales, when, the place being open in that direction, there is a nasty swell. A ruined fort marks point Papho. When compelled to anchor off the coast shelter may be found $2\frac{1}{2}$ miles S.E. $\frac{1}{2}$ S. from Papho, under the Moulia rocks; in the calmest weather they break, but there is shelter in 6 to 11 fathoms by entering the passage from the south-eastward, where it is widest and deepest. It is a summer anchorage, with shelter from the prevalent westerly winds; it seldom blows from S.W. at that season. Some supplies may be had in the vicinity.

The coast between Cape Bianco and Cape Zephgari falls back and forms Episkopi bay, where are many small sandy bays completely over to S.W.; and as the water is shoal and a heavy swell on the beach, the native craft find unsafe anchorage some distance out. There is neither water nor supplies here. The

vicinity of Cape Zephgari is clifty and rugged, with foul ground a mile to the westward and southward.

Akroteri peninsula breaks the general trend of the coast, and here stretches 5 miles southward, having a breadth of 3 to 5 miles; its west and east points are respectively Cape Zephgari and Cape Gata; the coast between the two capes is the southernmost land of Cyprus, and as the peninsula is highest in that direction it makes as an island when coming from westward. Here is a large salt lagoon.

On Cape Gata, which is bold and high, is a light tower whence is shown a *fixed white* light flashing every two minutes, and visible 15 miles.

Coming round the peninsula avoid the coast and the point.

AKROTERI BAY opens out after rounding Cape Gata, and as the coast falls back there is shelter from westerly winds, though it is open to S.E. There is also anchorage on good holding ground, in moderate depths, within a mile of the shore.

LIMASOL.—This town is about six miles northward of Cape Gata, and well in the bight of Akroteri bay. It lies parallel with the beach, and though the houses are humble, they are not squalid. It has a general Eastern appearance, with a tolerable bazaar, and is much like Larnaka, but comparatively clean and free from smells. The background is also more picturesque than that of Larnaka, the mountains, clothed with bushy patches, being nearer, and sloping gradually down to the shingly beach.

The anchorage is also better than that off Larnaka; there is good holding ground opposite the town in 12 to 7 fathoms, but the swell is inconvenient at times. It is entirely open to S.E., but these winds, when they blow, last only two or three hours, passing into S.W. and West; there is still the swell; there are no dangers near the anchoring ground. There is neither jetty nor landing stage, and landing is often very difficult in the winter. The supplies—meat, vegetables, bread and wine, are good; but water is indifferent in summer, as the stream that flows through the town in winter is then dry. Anchor well out in winter, closer in during summer.

From Limasol to Cape Kiti the coast trends eastward for 29

miles; in the intervening distance the mountains come down to the shore, and it is recommended not to approach into shoaler water than 15 fathoms; there is no shelter, anchorage, nor produce.

From Cape Kiti a *fixed white* light is shown from a mast on a white house, visible 8 miles.

LARNAKA.—Six and a-half miles northward from Cape Kiti is Larnaka the principal seaport of Cyprus. The intervening coast is a pebbly beach backed by a plain on which are several salt lagoons; a few rocks front the shore.

The town is in two parts, with a small salt lake between them. The *Marina*, with its bazaar and warehouses, fronts the beach; Larnaka proper is just northward of this, and is a short distance inland. The streets are unpaved, and the houses are built of unbaked bricks to which whitewash is unknown; notwithstanding the gardens the whole appearance is not pleasing. At the north end of the *Marina* is an extensive lazaretto, near to which, from a mast on a house, is shown a *fixed red* light, visible 4 miles. A small pier runs from the beach, and is used in calm weather.

There is anchorage ground in front of the *Marina*, and also off the lazaretto. It is entirely open to winds between southward and eastward, and with the strong S.E. gales of winter the sea occasionally breaks in 5 to 6 fathoms water; but the bottom is good, and with good ground tackle, and in a proper depth, there is no danger, only discomfort from the short sea and heavy swell. There are 8 to 11 fathoms just within a mile off the *Marina*, and 12 to 18 fathoms farther out, where large ships bring up; but when under 10 fathoms the bottom is in some spots hard and less secure. Bear in mind that inside the depth of 20 fathoms the water shoals rapidly. Landing is often impracticable in winter; and disagreeable in summer while the sea breeze is blowing, but it is calm in the evening; the sea breeze blows along the shore from southward.

Supplies of all kinds can be had on reasonable terms, and good water. The best salt works in Cyprus are here. Owing to the marshes around Larnaka it is not healthy during the summer.

The coast from Larnaka trends eastward, inclining to northward,

for 14 miles to Cape Pila, and thence 12 miles to Cape Grego, the S.E. point of Cyprus. The Cape is low and projecting, backed by a cliff 400 feet high; the coast between the two Capes is rocky.

From Cape Grego the coast trends first north-north-westward for a considerable distance, and then eastward to Cape Elœa, a total of curvilinear distance of 31 miles, forming Famagousta bay.

FAMAGOUSTA was, in bye-gone days, a noted town, but it is now in ruins, and heaps of stones choke the streets; the fortifications still remain, but the port, with its mole, only admits small native vessels that lay up during the winter. There is anchorage for large vessels off the town in 16 to 17 fathoms stiff mud; with less than 12 fathoms the bottom is sand and rock; small vessels find good anchorage in 4 fathoms inside the reef that runs parallel with the shore.

The ancient port of Salamis, now an inaccessible basin, is 3 miles northward of Famagousta, but there is good anchorage, on mud, in the roadstead in 16 to 10 fathoms.

From Cape Elœa the coast trends north-eastward, 30 miles, to Monastery Point, generally bold-to, except off Point Pyrila: a conspicuous black rock nearly level with the water lies a third of a mile off Monastery Point. Inland is a mountain range. There is anchorage along this coast during summer, and vessels load firewood and corn.

From Monastery Point to Cape Audrea (the north-east end of Cyprus) the distance is over 4 miles; the coast is rocky, and the Klides (several islets and rocks) extend E.N.E. upwards of a mile from the Cape.

The north coast of Cyprus extends 82 miles, from Cape Audrea to Cape Kormakiti. Here and there is a slight indentation, but generally no shelter and no inhabitants. A range of mountains backs the coast.

KYRENIA.—This ancient port, with the remains of the old sea wall, is 20 miles eastward of Cape Kormakiti. It only admits small vessels, as the depth inside is from $1\frac{1}{2}$ to 2 fathoms. It is called Ghirni by the Turks.

About $4\frac{1}{2}$ miles westward of Kyrenia, at Akropedi point (marked by a small islet) is a monastery; and inland, at the pretty villages of Caraves and Lapta, supplies may be procured.

MORPHEU BAY.—Pomo point lies S.W. by W. $\frac{1}{4}$ W. 23 miles from Cape Kormakiti, but the coast between trends sharply to southward, forming Morpheu bay. At the end of the bay is a magazine of stores, and 3 miles inland stands the town of Lefka in a beautiful valley, amidst luxuriant vegetation; here supplies of all kinds are abundant. The east side of the bay for 6 or 7 miles south of Cape Kormakiti is low and rocky, and thence a low, pebbly and sandy beach extends 11 miles; on this side are several villages. The depth of water and bottom are good, but the coast being completely open to westerly winds, anchorage is unsafe, and boats can only land in very favourable weather. The coast from the magazine to Pomo point is rocky, but between some projecting cliffs are the small sandy bights of Lautro and Pyrgo; these afford good summer anchorage to the native craft in 12 to 6 fathoms. If used in winter, which is done occasionally, vessels stand out to sea on the first indication of northerly winds.

Pomo point must be given a wide berth, as shoal water extends from it a mile or more.

KHRYSOKE BAY is formed between Pomo point and Cape Arnauti. The head of the bay is a low sandy beach, but elsewhere rocky and fringed with sunken ledges and outlying rocks. It is much frequented in summer by native vessels, as the depth of water is moderate, with good holding ground. It is entirely open to N.W. The village of Polis at the head of the bay has a small pier on the beach. "It has stood for several years, and we may arrive at the conclusion that the winter gales, however strong they may be in the offing, scarcely ever blow home" (Capt. T. R. Graves, R.N.) Corn and firewood are the chief cargoes from this end of the island.

SOKOTRA.

The island of Sokotra, 71 miles long (east and west), and 22 miles wide at its broadest part, lies between lat. $12^{\circ} 19'$ and $12^{\circ} 43' N.$, and between long. $53^{\circ} 19'$ and $54^{\circ} 31' E.$; in shape it

is very irregular, narrowing to a sharp point at its east extremity; the southern coast is rudely convex, with few salient points, but the northern and western shores are indented and broken into a succession of open bays. The plateau of soundings immediately connected with the island is also very irregular in contour, extending much farther on the south than on the north side, but stretching from the west end of Sokotra, in a southerly, south-westerly, and westerly direction, is a well-marked plateau of soundings of varying width and irregular depth, which terminates in long. $51^{\circ} 50' E.$, 87 miles from Ras Shaab, the most westerly point of Sokotra; on this plateau are the islands of Abd-al-Kuri, Shamheh, and Darzi, and a few scattered rocks. The westernmost point of Abd-al-Kuri is 52 miles E.N.E., and Ras Shaab (on Sokotra) 128 miles E. by N. $\frac{3}{4}$ N. from Ras Asir (Cape Guardafui), the nearest part of the African Continent; but though the entire group of islands may be geographically considered an appendage of that continent, it is certain that they are quite distinct as regards many of their physical characteristics.

Our chief information respecting Sokotra has been obtained from a memoir on the island by Lieut. J. R. Wellsted, I.N., in the *Journal of the Royal Geographical Society*, vol. v.

General Description of Sokotra.—"The whole island may be described as a pile of mountains, of nearly equal height, almost surrounded by a low plain, extending from their base to the margin of the sea. This plain is of irregular width, varying from two to four miles, excepting near Ras Felink and Ras Shaab, where the mountains rise up perpendicularly from the sea, and it disappears altogether. Throughout the whole extent of this belt, with the exception of those parts which are watered by the mountain streams in their progress towards the sea, and some spaces hereafter specified, the soil is hard and does not, in its present state, appear to any considerable degree susceptible of cultivation. The southern side of the island, though considerably less fertile than the northern, is yet, in the vicinity of Ras Mom, reasonably productive, but, to the westward of it, is as arid and barren as the worst parts of Arabia. There the force of the south-west monsoon has blown the sand up

from the seashore, where it is so fine as to be nearly impalpable, and formed it into a continuous range of sand hills, which extend parallel to the beach for several miles, whence it spreads over the plain, and is even, in some places, deposited in great quantities at a distance of three miles from the sea, at the base of the mountains, which there form a barrier and alone prevent it from overwhelming the natural soil of the whole island. On the northern side the plain is stony and covered with a dwarfish bush (the *metayne*) about six feet in height, the foliage of which appears to be retained during the north-east monsoon, and gives to the space where it grows the appearance from a distance of being clothed with verdure. Such is the appearance and nature of the sea-coast, but the high land exhibits a great variety of soil and surface. As a general remark, it may, however, be observed that nothing, during the period of the north-east monsoon, presents a stronger contrast than the eastern and western sides of the island: while the former is destitute of verdure, has scanty pasturage, and, with the exception of some places near the sea, has no other water than what is retained in natural reservoirs; the latter is supplied with frequent streams, its valleys and plains afford luxuriant grass, herds of cattle are numerous, and the scenery in many places is equal to that of our own country.

“Beginning with the granitic range of mountains in the vicinity of Tamarida, as the most central and lofty, steep valleys divide it into narrow ridges, which extend in a north-easterly and south-westerly direction; of these the upper range is composed of coarse grey granite, whose spires attain a height of 4,000 feet, their summits are consequently seldom free from clouds, but when the weather is clear their appearance is broken and picturesque. The lower parts of the chain are covered with the same dwarfish tree as the plains higher up, with a considerable variety of other trees and dwarfish plants; but the granitic spires merely nourish a light-coloured moss. Connected with the granitic range, and extending from north to south, a lower range is found averaging in height about 1,900 feet, and composed of a compact cream-coloured, primitive limestone; from this the hills diverge in short ranges to the sea-shore, their outline being mostly smooth,

table-topped, with rounded sides, except towards the sea, where they are precipitous. This description equally applies to the hills in the western part of the island.

“Sokotra is not distinguished by any remarkable fertility of soil, yet it is so varied as to be difficult to be able to speak of it in general terms. The summits and sides of the greater part of the mountains composing the eastern part of the island present the smooth surface of the rock entirely denuded of soil, though in some places the rain has worn hollows and other irregularities, in which is lodged a shallow deposit of light earth, and a few shrubs spring forth. On the summits of the hills on the northern side of the island, and against the sides and elevated regions in the vicinity of the granite peaks a dark, rich vegetable mould is found, which nourishes a thick and luxurious vegetation. In the plain about Tamarida, and some portions near Kadhup, are several beautiful valleys. The soil is a reddish-coloured earth, which nourishes, at certain seasons, an abundant supply of grass, and appears well adapted for the cultivation of grain, fruit, and vegetables. In the valleys through which the streams flow, not only are there extensive groves of date trees, but the existence of a broad border of beautiful turf, occasional enclosures of millet (*dakhan*), and, though but rarely, a plantation of indigo or cotton indicate no want of fertility in the soil. The natives themselves, indeed, are aware of this, and speak of their own stupidity and indolence as the work of fate.

“*Climate*.—Though Sokotra is situate only a short distance from the continents of Africa and Arabia, and is, in fact, in the same parallel with their most parched and burning plains, yet, from both Monsoons blowing over a vast expanse of water, it enjoys, at least, as compared with them, a remarkably temperate and cool climate. A register of the thermometer, kept in the North-east Monsoon, from the 12th of January to the 13th of March, exhibits, during that time, the mean daily temperature of $70\frac{1}{2}^{\circ}$, while several streams, at but a short distance from the level of the sea, indicated the mean annual temperature at $74\frac{1}{4}^{\circ}$ (Fahr.) On the hills it is still cooler, and the great elevation of the granite mountains would enable settlers to choose their own climate.

Until a few days before we quitted the island the Monsoon blew very fresh, and at times the wind swept through the valleys with a violence which I have rarely seen equalled. The sky was usually overcast, and while in the countries of Asia and Africa, under the same parallel, some time was yet to elapse before the termination of the dry season, Sokotra enjoyed frequent and copious rains, due to her granite mountains, the lofty peaks of which obstruct the clouds, causing them to deposit their aqueous particles to feed the mountain streams, or precipitate themselves in plentiful showers over the surrounding country.

“ On our second visit, in the S.W. Monsoon, from June 1st to July 13th, during the time the vessel remained in Tamarida bay, we found the average temperature much higher than the above, the thermometer ranged from 80° to 95° ; but it should not at the same time be forgotten that we were then under the high land on the lee side of the island, and the wind became heated in its passage across it. On the windward side of the island, the summits of the mountains, and the open part of the coast between Ras Moree and Tamarida bay, the weather was at this time also delightfully cool.

“ In place of the dark cloudy weather with which the season of the S.W. Monsoon commences in India, it was here for the most part clear and cloudless, the stars at night shining forth with uncommon brilliancy. During this period also, when it was blowing nearly a hurricane, and when the gusts swept down from the mountains with a force almost irresistible, throwing up the water in sheets, and keeping our decks and masts to the height of the tops continually wet with the spray, we had, with the exception of a dense white canopy of clouds formed like the table-cloth over the Table Mountain at the Cape, before the setting in of the breeze with its utmost degree of violence, the same clear and cloudless weather. The wind when it blew strongest felt dry ; and, indeed, such was its siccidity, that water dropped on the deck dried up instantaneously. As is usual with winds of this nature, we felt hot or cold, according to the previous state of our own skins. If we were perspiring, we felt cool ; but otherwise, we felt hot, feverish, and uncomfortable. And notwithstanding the heat of the

wind at Tamarida at this season, the natives do not ascribe to it any ill effects ; it would merely appear from their testimony that intermittent fevers are prevalent at the change of either Monsoon, and few of the Arabs from the coast, who reside here any time, escape them."

Productions and Supplies.—The chief productions of the island for commercial purposes are aloes ; a gum akin to dragon's blood ; and several varieties of hard wood, applicable for sheaves of blocks, splicing-fids, &c.

When pure, Sokotrine aloes, obtained from the *aloe spicata*, is the finest in the world ; but owing to the careless manner in which it is gathered and packed, it contracts many impurities, and its value becomes proportionately deteriorated. A much greater quantity might be procured than is now exported, as the hills on the west side of the island are thickly covered with plants for an extent of miles ; but owing to the indolence of the inhabitants it is only collected when the arrival of a vessel creates a demand. The plant grows wild on the sides and summits of the limestone mountains, at an altitude of 500 to 3,000 feet above the level of the sea, and appears to thrive best on parched and barren spots.

The "dragon's blood" is obtained from the *pterocarpus draco*, which rarely grows at a less elevation than 800 feet, and frequently as much as 2,000 feet above the level of the sea. The gum exudes spontaneously from the tree, and is collected at all seasons, but far the larger part goes to waste consequent on there being no regular demand for it. There is another gum, but light-coloured and slightly odoriferous, called by the natives *amare* ; this, however, is inferior to the *luban* of the Arabian coast.

A species of millet, called *dakhan*, is the only grain cultivated on the island ; it requires little attention and produces a crop at any season ; none is grown on the western side of the island, but the enclosures among the valleys on the eastern side are very numerous. It is to the date groves, next to their flocks, that the inhabitants look for the principal means of support ; these border the numerous streams at the eastern part of the island, but are elsewhere scarce. There are a few plots of beans, pumpkins, and other vegetables, especially in the vicinity of Tamarida. A little

tobacco is also grown, sufficient for the consumption of the inhabitants. Many kinds of fruits are found growing wild, and attest a higher state of cultivation of the island at a former period; but agriculture is now almost entirely neglected.

Oxen are numerous near Tamarida and on the mountains in its vicinity; the cows are kept mostly for their milk, from which the ghee, so much esteemed in Arabia and Africa, is made. Vast flocks of sheep and goats are found in every part of the island—the latter are so numerous that the owners keep no account of them. Asses abound, and wander about in troops; they have been superseded, as beasts of burden, by camels which are noted for their size and strength.

Antelopes, hyænas, jackals, dogs, monkeys, and other animals which are common to the neighbouring continents are unknown in Sokotra, but civet cats, the only wild animal known among the hills, are very numerous. The cameleon is a native of the island. Birds of many kinds are not wanting. On the low lands, scorpions, centipedes, and a large venomous spider (called *nargab*) are common; ants abound everywhere, and one species inflicts a bite scarcely less painful than the sting of a wasp.

Fish swarm on the banks around the coast, and turtle may be caught in large numbers during the season.

Inhabitants.—The entire population does not exceed 3,000. It has been supposed that the Bedouins, or those who inhabit the mountains and the high land near the western end of the island, are the aborigines; those who dwell in Tamarida, Kadhup, Gollonsir, and the eastern part of the island are a mixed race—the descendants of Arabs, African slaves, Indian traders, Portuguese, and others. In by-gone days the inhabitants (or perhaps only a part of them) were Christians; when and how they became such is not clear; they are now Mohammedans and no vestige of their Christianity remains. They have always been accounted friendly and hospitable; but some accounts, since 1870, have led to the believe that they are treacherous; the cause for this change does not appear. Their language is a dialect peculiar to the island, but Arabic is generally understood by them.

Winds.—The N.E. Monsoon from November to January usually

brings a great quantity of rain with it; at this time the N.N.E. wind often blows in gusts for several days at a time, rendering the north side of the island dangerous, as the anchors will not hold.

The fine season lasts from February to May, when anchorage off the north coast is safe; trading vessels from India frequently visit Bander Fikeh for water during April.

The S.W. Monsoon in June, July, and August is steady but strong on the south coast, sending, however, a tremendous sea and surf on the low land of Nowkad which fringes the table-topped limestone ridge; rain is also experienced in these months; this Monsoon is said to blow incessantly in hard and violent gusts on the north coast.

Droughts are not entirely unknown, though they are rare.

September, October and November bring light land and sea breezes; towards November the wind becomes more steady from northward.

During the S.W. Monsoon, S.S.W. winds are very strong in the channel between Africa and Sokotra.

Ports.—Sokotra has no ports in which a vessel can ride in safety, protected from all winds; and it is only on opposite sides of the island that good shelter is found from the prevailing Monsoon.*

During the N.E. Monsoon the bays and anchorages sheltered from E. and E.N.E. winds are Ghubbet Kurmeh, Ghubbet Gollonsir, Ghubbet Shaab, Bander Ne, Bander R'dresseh, and Bander Fikeh; also Tamarida, with the wind from the east, if anchored close in shore; during N.E. winds all these, with the exception of Tamarida, afford tolerable shelter,—the same remark applies (generally) to the south coast, if close in. During N.N.E. winds Ghubbet Shaab alone gives shelter, all the other bays being a dead lee-shore; at Bander Ne, on the south side, the anchorage is also good, if close in.

During the S.W. Monsoon, there is shelter in all the bays

* *Note.*—Ghubbet, means bay or gulf; Bander, harbour or anchorage; Jezirat, island; and Ras, cape or headland.

between Ras Kadarmeh and the west end of the island,—these are Kurmeh, Kadhup, Tamarida, Delishi, Garrieh, Fikeh ; but they are subject to very strong gusts of wind that come from the mountains and through the valleys. Natives say that, at this season, the only really good anchorage is at Bander Delishi, where a vessel can ride out the Monsoon in a perfectly smooth sea and free from the effects of wind. Good ground tackle is necessary, for the soundings deepen rapidly on the north side of the island.

TAMARIDA, or HADIBU, the capital of Sokotra, is on the north side of the island, and 30 miles from the east end, in lat. $12^{\circ} 39'$ N., long. $53^{\circ} 59' 20''$ E. It may be known by the high craggy peaks of the mountain range, 3,000 to 4,000 feet high, which overhang the plain on which the village stands ; or, should the peaks be clouded, by a high sand-hill (Jebel Omhari) at the N.E. extreme of the bay, and a low point (Ras Haulaf) partly sandy, partly rocky. The anchorage is indifferent, bottom of sand and stones, but there is no danger in the bay ; the soundings gradually increase from the shore to 10 fathoms at the distance of a mile, and 20 fathoms at $2\frac{1}{2}$ miles. The landing place is a quarter of a mile from the village, close to a small stream near a grove of date-palms. The population does not exceed 200.

Supplies.—Good water, bullocks, goats, sheep, and fish may be procured here at reasonable prices ; also firewood. The natives are poor but hospitable, and ready to barter refreshments for rice. Grapes, water-melons, pumpkins, oranges, and plantains may be obtained in March and April, and dates in June.

As it is only our intention to give a general description of Sokotra and its vicinity, our readers must refer to the proper sailing directions for, and charts of, the island, for a more detailed account of the anchorages and dangers.

RAS SHAAB, the western extremity of the island, in lat. $12^{\circ} 33' 20''$ N., long. $53^{\circ} 18' 40''$ E., is a fine bluff cape, terminating the sloping side of a mountain ; off it a reef extends $1\frac{1}{2}$ cable. The depth at half a mile from the point is 14 fathoms, gradually increasing seawards to 100 fathoms about 6 miles from the shore.

RAS D'DRESSEH, in lat. $12^{\circ} 34' 15''$ N., long. $54^{\circ} 30' 50''$ E., is the eastern extremity of the island, and forms in two small rocky

points a mile distant from each other; a reef extends 3 cables off each point, and at a distance of $1\frac{1}{2}$ mile to the eastward and northward there is no bottom with 120 fathoms. The strong rippling produced by the tides leads navigators to suppose the reef off the cape extends farther than it really does. There are also outlying rocks and a reef nearly a mile off the southern point, on which account the cape should always be given a wide berth.

Ras Mom, in lat. $12^{\circ} 34' 10''$ N., long. $54^{\circ} 27'$ E., is the extreme eastern bluff terminating the range of mountains that extend through the whole length of Sokotra; being 1,920 feet high, it is a conspicuous object before the low land of Ras R'Dresseh is visible.

SABOYNEA is a small granitic islet fronting Ghubbet Shaab; it forms in three peaks, is 800 yards long and 150 yards wide, and may be seen from 25 to 30 miles, showing at first as two ships under sail. The islet is 9 miles N.W. $\frac{1}{4}$ W. (westerly) from Ras Shaab, and within half a mile of it are 25 to 30 fathoms water.

Caution.—Approaching Sokotra avoid the salient points of the island, as there are generally outlying rocks or a reef connected with them. The soundings are very irregular and also deep on the north side, 100 or more fathoms being found at a mile from the shore in some places, while at other spots 30 to 40 fathoms sand and coral may be found 3 to 4 miles off. The soundings off the south coast are also irregular, but not deep, 15 to 20 fathoms at 4 to 12 miles off, and then decreasing towards the shore, in the vicinity of which there are usually 3 to 8 fathoms. The currents in the immediate vicinity of Sokotra are very much influenced by the wind, according to the prevalent monsoon, but most uncertain during the N.E. monsoon. Unless intending to call at the island give it a wide berth. The most dangerous parts are the coast between Ras Gollonsir and Ras Samari, where a reef, mostly dry at low water, extends a mile seawards; and off Ras R'Dresseh, where some rocks and a reef are found nearly a mile from the coast.

JEZIRAT DARZI, the easternmost of two islands frequently called the *Brothers*, is $8\frac{1}{2}$ miles in length, by $1\frac{1}{2}$ mile in width at its widest part, near the centre; it rises perpendicularly from the

sea to an elevation of 970 feet, except on the northern side, where the north point of the island projects about 700 yards from the base of the hill, and off the latter point a reef of 3 fathoms on it extends about half a mile, with 13 fathoms $1\frac{1}{4}$ mile off. The eastern bluff off Darzi is in lat. $12^{\circ} 6' 20''$ N., long. $53^{\circ} 17' 30''$ E., and $19\frac{1}{4}$ miles from Ras Kattani, the nearest point of Sokotra.

JEZIRAT SAMHEH, the westernmost of the *Brothers*, bears from Darzi W. by N., distant 9 miles; it is nearly $6\frac{1}{2}$ miles long, by 3 miles at its eastern end; at its western end it narrows to a point. The highest point of the island is 2,440 feet above the level of the sea; its shores are rocky, and the south side rises in perpendicular cliffs from the sea. A reef extends half a mile off the western point, and another from the N.E. point to the same distance; and there are two small rocky islets off the south-east side. The island is visited by people from Sokotra in the fine season, for the purpose of fishing, catching turtle, and collecting ambergris. The west point of Samheh is in lat. $12^{\circ} 9' 20''$ N., long. $52^{\circ} 58' 30''$ E.

ABD-AL-KURI is a long narrow island between the west end of Sokotra and Ras 'Asir, but nearer to the latter; it is 20 miles in length (W. by N. and E. by S.) by nearly 4 miles in width at its widest part. Two ranges of hills, separated near the centre, occupy the whole length of the island, and from a distance it appears as two islands. The eastern range is 1,670 feet above the sea at its western extreme, while the western range is only 500 feet high at its highest part. The northern coast is chiefly a sandy beach, with a few rocky points; but the southern coast is composed of cliffs rising abruptly from the sea. The bank of soundings extends from 1 to $2\frac{1}{4}$ miles to the northward, and $3\frac{1}{2}$ miles to the southward of the island. The inhabitants are few and very poor, and they are seldom visited, for the island is entirely destitute of cultivation, and the water is very indifferent.

Bacchus Bank.—To the north-eastward of the N.E. point (Ras Anjireh) of Abd-al-Kuri a bank extends over 3 miles, on which the depths vary from 5 to 12 fathoms; it terminates in a coral reef with 3 to 10 fathoms on it, rapidly deepening off the bank to the northward, where the edge of the bank is only distant one-third of a mile. A strong ripple is created on this bank when the

tide is setting in opposition to the wind. The N.E. point of Abd-al-Kuri is in lat. $12^{\circ} 11' 15''$ N., long. $52^{\circ} 22' 20''$ E.

The western extremity (Ras Khaisat-en-Naum) of the Abd-al-Kuri forms in two sharp rocky points, distant half a mile; from the northern point a reef of rocks extends westward nearly a mile. The south point of the western extreme is in lat. $12^{\circ} 13' 20''$ N., long $52^{\circ} 2' 45''$ E.

The master of the S.S. *Hong Kong* having reported the loss of that vessel on February 22nd, 1875, by striking on a sunken danger (foundering within ten minutes) said to be from $3\frac{1}{2}$ to 4 miles westward of Ras Khaisat-en-Naum, the western extremity of Abd-al-Kuri island, H.M. Surveying vessel *Fawn* proceeded in May, 1877, to examine that locality, and with the following result. Although the suspected ground was closely sounded over two days, while a long and heavy swell from the southward prevailed, and a careful look-out from the masthead was maintained, no danger could be detected beyond the outer breaker of the reef which extends one mile westward of Ras Khaisat-en-Naum. This extending reef from Ras Khaisat-en-Naum is steep to on the north, west and south sides; the shoalest part being considered to be in the breakers at the western extremity. For the position of this outer breaker the following bearings and distances are given:—Ras Khaisat-en-Naum, East $9\frac{1}{2}$ cables; North extreme of Abd-al-Kuri island, N. 83° E. $1\frac{1}{10}$ miles; South extreme of Abd-al-Kuri island, S. 48° E. $1\frac{1}{2}$ miles; South extreme Kal Farun, N. 21° E. 13 miles. The western extremity of the reef was breaking furiously during the examination by the *Fawn*, and is probably much shoaler than the remainder of the reef, as, for the distance of half a mile inside a break was only noticed two or three times in the hour. At half a mile northward of the outer breaker the depth is 25 fathoms, rapidly deepening; at this distance in a west and southerly direction the depth is not less than 35 fathoms; whilst a depth of 5 fathoms was found close to the edge of the reef in all parts. During the survey of this locality, the current was observed setting to the N.N.E. at from $\frac{1}{2}$ to $1\frac{1}{2}$ knot per hour, and numerous tide rips were seen in the vicinity of the shoal ground.

Caution.—Commander Wharton remarks that, off the west end of Abd-al-Kuri island, owing to the higher hills being some distance inland, it is difficult to estimate distances from the shore correctly. This fact should be borne in mind, especially at night, when, to ensure passing the west end of this island at a prudent distance of not less than two miles, the water should not be shoaled under 40 fathoms.

Bander Saleh, or *Leven Bay*, is on the south side of Abd-al-Kuri, being a concavity in the coast line, immediately to the westward of the extreme of the high mountain. The anchorage is very good in from 6 to 10 fathoms water, coral bottom, $\frac{1}{4}$ to $\frac{1}{2}$ a mile from the shore, affording shelter during the N.E. monsoon; but no supplies of any kind are to be procured. This is the narrowest part of the island, being only one mile across, and formed of elevated sand-hills. The sandy beach of Leven bay is in lat. $12^{\circ} 10' 20''$ N., long. $52^{\circ} 12' 40''$ E.

KAL FABUN, or *Salts' White Rocks*, 12 miles northward of the western part of Abd-al-Kuri, are about $\frac{1}{4}$ of a mile long by 200 or 300 yards in width; they consist of two rocks divided by a narrow channel filled up with sunken rocks, and are situated on the northern side of a large bank of soundings 10 miles in length, N.E. and S.W., by 6 miles in breadth. In different directions they make as two or five peaks. They are visible, in clear weather and during the day, about 20 miles; but at night they are difficult to distinguish, owing to their colour. Birds abound in their vicinity.

The bank of soundings and islands here described are well placed on the charts, to which, and the sailing directions, the navigator is referred. No known outlying dangers exist except Bacchus reef, but there are reefs jutting off some of the projecting points of the islands.

ABSTRACT OF SEA CASUALTIES, 1876-7.

PART II.—LOSS OF LIFE.

IN our last number we dealt exclusively with the waste of property in the Mercantile Marine arising from Sea Casualties. We have now to deal with the loss of human life arising from the same causes. Mr. Lowe recently said, and said truly, "England has been a colonizing country, and she has been a country of seamen and trades and manufacturers and commerce. By these means she has become great and powerful." But the victories of peace are not always bloodless, as our vital statistics show. Although it is satisfactory to reflect that all the violent deaths during a whole year in the pursuits of civilization in England and on the high seas would not number as many as the victims of one modern battlefield, they are nevertheless sufficiently numerous and deplorable to demand the attention of the politician as well as the philanthropist in order that the very considerable drain on our industrial population arising from such causes may be reduced to a minimum. It is a curious fact that the reduction of population by accidental and other violent deaths, in England alone, and in British ships at sea, during the year 1876, was more than half the reduction resulting from the excess of emigration over immigration in the United Kingdom during the same year. The number of violent deaths in England alone, and exclusive of deaths at sea (2,198) was 18,379, of which 15,995 were owing to accident, or negligence, and these, says Dr. Farr, "were largely due to the mines and the railways. The particulars of each kind of death are analysed in the hope that by pointing out the dangers to life their fatality may be diminished."

The excess of emigration over immigration was only 88,065 for the United Kingdom during the year 1876. Statistics of loss of life at sea have hitherto been very incomplete, and difficult of treatment. Indeed, the Registrar-General of Births and Deaths

in attempting in his last report to institute a comparison between the deaths by drowning in the Royal Navy and the Mercantile Marine does so with such incomplete materials that his results are wholly misleading. Taking a return recently issued by the Registrar-General of Seamen of all the deaths reported to him during a year as having occurred in British and Colonial registered vessels and in fishing vessels, the Registrar-General of Births and Deaths calculates the percentage which the sum total of this return bears to the actual number of men employed in vessels *registered in the United Kingdom alone*, and thus comes to the erroneous conclusion that the mortality from all causes among British seamen was 20·9 per thousand, or nearly as high as the mortality among butchers and publicans, and other unhealthy trades ashore?

But a comparison from this unsound basis between the deaths by drowning in the Royal Navy and the Mercantile Marine is specially unfair to the latter. The time of peace to Royal Navy Jack is to Mercantile Jack the time of war—war with the elements, which he is bound to face, “blow high, blow low,” whilst his warlike brother is peacefully swabbing the decks or doing other safe work in harbour, or perhaps patrolling in the Coastguard Service. From these incorrect data the Registrar-General finds that the deaths by drowning in the Mercantile Marine, from all causes, were 11·2 per thousand, and from wreck alone 6·2, whilst the deaths by drowning, from all causes, in the Royal Navy, were 1·2 per thousand!

In one respect, and in one only, is the table of the Registrar-General satisfactory, and that fortunately appears to be the most reliable one. Assuming the Registrar's figures to be correct, we discover a decrease of 442, or over 2 per thousand in the number of British seamen lost by wreck during 1876, as against the average for the preceding ten years.

In dealing with the same figures in his valuable handbook to the Merchant Service, entitled “Under the Red Ensign,”* Mr. Gray

* “Going to Sea; or, Under the Red Ensign,” by Thomas Gray. One Shilling. To be had of all Agents for the *Nautical Magazine*.

makes the following remarks :—" Of the 348,959 British seamen employed, the Registrar-General of Seamen records the deaths of 4,151 seamen from all causes, being 1·189 per cent. on the total number, or under 12 per thousand. Of these 4,151 deceased seamen, 1,237, about $\frac{1}{3}$ per cent., or $8\frac{1}{2}$ per thousand of the whole number of British seamen were lost by shipwreck. Although this number does not include *all* the lives lost in Colonial vessels, it is no doubt substantially accurate and, *per contra*, includes many fishermen, stowaways, carpenters, surgeons, stewardesses, &c., &c. But eliminating the British Possessions from the vessels' side, it is found that the men employed in British ships alone numbered 264,039, and the percentage of deaths on these would be 1·572 (about $1\frac{1}{2}$ per cent., or 15 per thousand) from all causes, and the percentage of deaths from wreck alone would be ·468 or under $\frac{1}{2}$ per cent." Assuming these two calculations to err on either side, Mr. Gray takes the mean, which is 13·8 per thousand deaths in the Mercantile Marine against the Registrar-General's 20·9 per thousand! Mr. Gray gives some interesting statistics in his book which prove conclusively that the death rate among seamen afloat is quite as low if not lower than the death rate among some of the healthiest trades ashore.

The Abstracts of Sea Casualties in its new form, and in conjunction with the Statement of Trade and Navigation affords a fairer basis for comparison than has hitherto been available. These returns are not yet sufficiently assimilated to allow of exact comparison, but their defects are insignificant beside the incongruities which render almost valueless the table published by the Registrar of Births and Deaths. In regard to the latter, we do not see why masters are not included in the strength of the Mercantile Marine as well as mates, and why their deaths should not be recorded and tabulated. Certificated masters often act as mates and sometimes even go before the mast, whereas many registered vessels in the home trade are commanded by uncertificated masters, who, with the assistance of one or two men work the vessels themselves. We would also ask why, as it is impossible to get them all, the deaths in fishing and Colonial vessels are not distinguished from the deaths in other British vessels.

Statistics of mortality in British ships at sea to be of any use should be presented in a form that would admit of comparison with other statistics relating to the Mercantile Marine.

We hope that if it should be considered of public advantage to continue a comparison between the dangers of the Mercantile and Royal Navies, it will not in future be done in a manner that will place the former at an unfair disadvantage, and render valueless, if not mischievous, figures which, in their proper place, would probably be useful and interesting.

The new and improved form of the Wreck Abstracts enables us to draw a few comparisons which, we hope, will not be open to the objections to which all previous statistics of the kind have been subject. It is a pity that the statistics of deaths in the Mercantile Marine from other causes than wreck are not as easy of manipulation as those in the Wreck Abstract, for then it would be possible to show approximately the mortality among seamen afloat. It appears, however, from the Registrar-General's Returns, which, as we have pointed out, are most unfavourable to merchant seamen, that, after deducting the lives lost by drowning, the death rate from other causes was only 9·4, which is lower than the death rate in any trade or profession ashore from causes other than accident.

The annexed table shows the number of British seamen lost by sea casualties during the year 1876-7, and the proportion they bore to the estimated number of British seamen usually employed. We observe, however, that there are included among the casualties involving loss of life many casualties to small coasters which were probably unregistered and whose crews are not accounted for in the estimated number of British seamen. We are unable to approximate the number of men frequenting the sea in such vessels, but it is undoubtedly considerable. It is, however, impossible to extract from the Tables the persons lost in unregistered vessels other than fishing vessels, and they must therefore be allowed to swell the proportion as against safety, but the fact should be borne in mind. It would be well if the Board of Trade would make a still clearer classification than they have already done of the persons lost by shipwreck.

Class of Vessels.	No. of Vessels.	Crew.			No. of Seamen Lost.	Rate of Deaths.	
		Exclusive of Masters.	Allowing a Master to each Ship.	Total.		Per Cent.	
Registered in United Kingdom. }	25,090	264,376	25,090	289,466	1,729	·598	1 in 167
Registered in Colonies }	13,158	88,526	13,158	101,684	698	·698	1 in 145
Regstrd. under Sea Fisheries Act, 1868* }	7,066	—	—	35,000	313	·894	1 in 112
	45,314	352,902	38,298	426,150	2,740	·642	1 in 156

The high rate of mortality in fishing vessels is accounted for by the large number of Yarmouth and Lowestoft vessels lost on the 22nd January, 1877, during a gale in the North Sea. During the three years ended 1877, the yearly average of railway servants killed was 673, and of injured 2,794, making a total of 3,487. Assuming the number of railway employes to be 280,000, as estimated by Mr. Calcraft in his report for 1876, then the proportion of railway servants killed or injured during one year would be about 1 in 80. We are unable to show the percentage of railway servants who died in consequence of injuries on railways, as the companies only return those actually killed outright; but the above fact is remarkable when we recollect that a large percentage of railway employes are not exposed to the dangers of locomotion at all, whereas seamen are all liable to the dangers of the sea.

Only 311 passengers, including the wives, families, and friends of the owners and captains were lost in British ships during the year 1876-7. Of these 311 passengers, 156 were lost in vessels belonging to the United Kingdom, of which 81 were lost in steam and 75 in sailing vessels. Of the 81 passengers lost in steamships,

* These only include vessels over 15 tons, and the number of hands is an approximation, but certainly below the mark. Their average tonnage is about 30. There are, besides, 26,907 fishing boats registered under the Sea Fisheries Act, and employing over 70,000 hands.

77 were lost in the missing vessel *Pardo*, bound from Hong Kong to Singapore, and 4 were lost in the missing vessel *Tagus*, bound from Oporto to London. Of the 75 passengers lost in sailing vessels belonging to the United Kingdom, 55 were lost in the missing vessels *Cairo* and *Great Queensland*. The remaining 155 passengers were lost in Colonial vessels, of which 110 were lost in sailing and 45 in steamships.

As we have no means of ascertaining or even approximating the number of passengers conveyed hither and thither in British ships during the year 1876-7, we cannot show the percentage of passengers lost by shipwreck. It may, however, be fairly assumed that a man travelling in a British steam or even sailing ship during the year under notice was considerably safer than if he had been walking the street. Many people will be surprised to learn that not one of all the passengers who travelled between ports in the United Kingdom in steamships during the year 1876-7 lost his life by shipwreck, and that only 6 passengers, all of whom were friends of the captains, were lost in sailing vessels. These facts contrast favourably with the 126 passengers killed and 1,283 injured on railways, and may not be altogether without interest to passengers who have the option of travelling by land or by water.

Altogether, 3,051 lives were lost in British ships, of whom 2,198 were lost in vessels belonging to the United Kingdom, and 853 were lost in Colonial vessels. But in addition to these there were 424 lives lost in foreign vessels, of whom 317 were lost on the coasts of the United Kingdom, and 107 on the coasts of British Possessions abroad, raising the total of lives lost which are dealt with in the Abstracts to 3,475.

The loss of life on the coasts of the United Kingdom may be shown as follows :—

	SAILING.			STEAM.			TOTAL.		
	Vessels.	Lives Lost.		Vessels.	Lives Lost.		Vessels.	Lives Lost.	
Vessels registered in United Kingdom...	113	...	353*	...	13	...	94	...	447
Vessels registered in Colonies ...	5	...	12	...	—	...	—	...	12
Foreign Vessels ...	59	...	315	...	2	...	2	...	317
	117	...	680	...	15	...	96	...	776

* Includes 6 passengers.

The large number of lives lost in foreign vessels is not as in some previous years accounted for by the loss of large vessels like the *Schiller* or *Deutschland*. The gales of December, 1876, and January, 1877, which drove a large number of foreign vessels on the east coast of Scotland, caused a lamentable loss of life. Between Cape Wrath and Fern Islands 288 lives were lost in 56 casualties during 1876-7, as against 61 lives lost in 16 casualties in the same geographical division in the previous year. Of the 776 lives lost in British and foreign vessels on our coasts, 92 were lost in 16 vessels that foundered, 470 in 86 vessels that stranded, 57 in 30 vessels that came into collision, 93 in missing vessels, and 64 in vessels which met with other casualties, such as striking on sunken wreck, being swept by heavy seas, &c.

The lives lost by sea casualties elsewhere than on the shores of the United Kingdom were as follows :—

	SAILING.		STEAM.		TOTAL.	
	Vessels.	Lives lost.	Vessels.	Lives lost.	Vessels.	Lives lost.
Vessels registered in } United Kingdom... }	157	1,255	35	496	192	1,751
Vessels registered in } Colonies ... }	112	769	5	72	117	841
Foreign vessels ...	10	77	1	30	11	107
	279	2,101	41	598	320	2,699

Of these 2,699 lives lost abroad, 608 were lost in British and foreign vessels on the coasts of British possessions abroad, 180 were lost in British vessels on the coasts of foreign countries, and 1,911 were lost in British vessels on the open seas. In 24 founderings 178 lives were lost, in 69 strandings 584 lives were lost, in 18 collisions 82 lives were lost, in 68 casualties from "other causes" 114 lives were lost, and 1,791 persons are supposed to have been lost in missing vessels.

The general tables relating to loss of life in British ships alone are full of interest. They show the trades, cargoes, sizes, and classification of the vessels in which life was lost, and the description of the casualties with which they met.

The following table will convey an idea of the casualties and trades in which loss of life most frequently occurs :—

			VESSELS ONLY.						
			Coasting.	Overseas.	Fishing.	Total			
Foundering	...	{ Vessels ...	18	...	12	...	9	...	39
		{ Lives lost	144	...	84	...	30	...	258
Strandings	...	{ Vessels ...	35	...	55	...	8	...	98
		{ Lives lost	171	...	425	...	19	...	615
Collisions	...	{ Vessels ...	16	...	15	...	6	...	37
		{ Lives lost	34	...	83	...	8	...	125
Other causes	...	{ Vessels ...	24	...	58	...	21	...	103
		{ Lives lost	48	...	85	...	36	...	169
Missing vessels		{ Vessels ...	20	...	104	...	39	...	163
		{ Lives lost	137	...	1,527	...	220	...	1,884
			<hr/>						
Totals	...	{ Vessels ...	113	...	214	...	83	...	440
		{ Lives lost	534	...	2,204	...	313	...	3,051

The foregoing table may be sub-divided as follows:—

		Coasting.	Oversea.	Fishing.	Total.
Vessels registered in	{ Vessels ...	56 ...	179 ...	83 ...	318
United Kingdom	{ Lives lost	155 ...	1,730 ...	313 ...	2,198
Vessels registered in	{ Vessels ...	57 ...	65 ...	— ...	122
Colonies ...	{ Lives lost	379 ...	474 ...	— ...	853
		<hr/>	<hr/>	<hr/>	
Totals	{ Vessels ...	113 ...	244 ...	83 ...	440
	{ Lives lost	534 ...	2,204 ...	313 ...	3,051

The most striking fact in the Abstracts for 1876-7 is the large number of lives lost in missing vessels. One hundred and sixty-three British vessels, with 1,884 persons on board, were reported to the Board of Trade during the year 1876-7 as being "missing." Deducting the 39 missing fishing vessels, with their crews of 220 men, there are left 124 missing vessels belonging to the Mercantile Marine, which have disappeared with 1,664 British subjects on board. Of these 124 vessels 78, with 1,207 persons, belonged to the United Kingdom, and 46, with 457 persons, belonged to the Colonies. Making a further deduction of 150 passengers from the number of lives lost in missing vessels belonging to the United Kingdom, and 57 passengers from the lives lost in Colonial vessels there are left 1,057 and 400 respectively, making a total of 1,457 seamen lost in missing British vessels other than fishing vessels. The average crew of the missing vessels belonging to the United Kingdom was 13·5, and to the Colonies 8·7. As regards Mr. Plimsoll's cure for all loss of life at sea, viz., compulsory classifi-

cation, it is noteworthy that of the 124 missing vessels other than fishing vessels, 65, with 1,066 persons on board, were classed in Lloyd's Liverpool Book or Bureau Veritas, and 59, with 598 persons, were not so classed, but only 21 of the 59 unclassified vessels belonged to the United Kingdom.

The grain trade contributed 551 to the number of lives lost, of which 423 were lost in 23 missing vessels. On looking through the list we find that the Baltic, Black Sea, United States, and Morocco trades appear to have contributed their fair proportion, not much security apparently being derived from the supervision exercised by underwriters in American ports. The rising grain trade with India appears, however, to be peculiarly dangerous, 186 lives and 15 vessels having been lost in it during the year 1876-7. We recommend this fact to the attention of the India Office, or rather to the notice of underwriters who accept risks in the Indian grain trade.

The coal trade contributed 487 to the total of lives lost, and of these 327 were lost in 27 missing vessels. We can only find that two lives were known to have been lost by combustion of coal or explosion of coal gas, and these were lost by explosion of gas, on board the steamers *Levant* and *Lufra*, both of which were bound from Cardiff to Mediterranean. It is however probable that some of the 27 missing coal-laden vessels were lost from spontaneous combustion or explosion. We find that 10 coal-laden vessels whose crews were saved, were burnt at sea during the year. Here again we call the attention of underwriters to the neglect to provide surface ventilation on coal ships.

General cargoes contributed 502 to the total of lives lost, of which 333 were lost in 11 missing vessels. Such cargoes as were carried by the *Great Queensland*, *Cairo*, &c., come under the denomination "General," and this fact may account for the great loss of life under this head. A great part of a general cargo is often inflammable, and attention to stowage is necessary. Ballast accounts for the loss of 253 persons, of whom 92 were lost in 13 missing vessels:

Thus we find that of the 2,737 lives lost in British vessels other than fishing vessels, 1,542 were lost in vessels carrying grain, coal,


and general cargoes, and that of the 1,164 lives lost in missing British vessels other than fishing vessels, 1,083 were lost in vessels carrying grain, coal, or general cargoes.

We need not go further with this analysis. We have already placed the chief facts of the Abstracts of Sea Casualties before our readers, but we recommend any who require further information to refer to the book itself. It is not our intention to draw any further deductions from the foregoing figures, nor will we venture to suggest any remedy for the loss of life in missing vessels which, as we have shown, is singularly shocking. If these missing vessels had been chiefly old or unclassed vessels, or had been laden heavily, or with a certain description of cargo, then we should have felt bound to advise shipowners and underwriters to remove or carefully examine the exceptional conditions which might have conduced to their disappearance. But on the contrary every class and condition of vessel, and every trade contributed its proportion to the alarming total. Perhaps stress of weather may account for many missing vessels, collision at sea for some, ice and floating wreck for others, whilst infernal machines, such as that shipped in the German steamer by the miscreant Thomas, may account for a few ; but we cannot avoid thinking that the disappearance of many vessels is owing in many cases to want of the requisite care on the part of those directly responsible for their safe stowage and loading—namely, the masters and officers of the missing vessels.

We would therefore enjoin on masters the duty and prudence of seeing to the seaworthiness of their vessels before sailing, for not only do they risk the lives of their crew but they risk their own lives, and in the event of reaching port render themselves liable to a prosecution for misdemeanour.

STEERING GEAR.

BY CAPTAIN MILLER.

NDER the head of "Bridge Steering Gear," in your April number, I put the following question, "Is the power of a rudder for revolving a steamer on her axis limited to 45 degrees? and, if 90 degrees were applied, would she describe a smaller circle in a given time, and would it be more conducive to safe navigation, and all its attending interests?"

In the June number, your correspondent "W." replies to the question, but does not answer it; he seems to me to be reasoning from a different basis to that which I have taken in my question; he evidently regards *that*, as the most effective angle of a ship's rudder which allows her to perform a complete circle in the least amount of time, while I, on the other hand, regard *that* as the most effective angle which forces the ship to revolve in the least possible circle. The fact of an "excessive arc of the rudder deadening the ship's headway" will not be disputed by any practical sailor; but while this "excessive arc" is unadvisable in the solitary instance he has adduced of a sailing ship going round in stays, it is desirable, even in her, in all other instances of turning, and in wearing round in a gale, or on a lee shore, it would be invaluable. The more the rudder can be made to perform the part of a hawser, made fast from aft to the shore, or to an anchor let go at the stern for wearing, the better. With the hawser, or anchor, the ship would fall before the wind in her own length. Why should not the rudder, as far as it is practicable, be made do the same work? In a steamer with propelling power always available, there is even less excuse for limiting the angle of the rudder.

Even if at 90 degrees angle, the rudder had lost all its revolving force it would still be invaluable, if only to "dead" the ship's headway as speedily as possible. An "excessive arc of the rudder" is a widely different thing in a sailing ship going round

in stays, and in a steamer avoiding a collision, or turning in a narrow river, or running into danger; and two very different aims have to be studied. Besides, if the rudder of either ship is capable of being heaved over 90 degrees, there is no necessity laid upon any one to use it to the full extent. It would still be left to nautical skill and experience to use it as circumstances suggest or dictate.

Up to the present, in the Mercantile Navy, nautical skill and experience is limited to 45 degrees, and in the Royal Navy, according to your correspondent, to 42 degrees. With the gear at present applied and the useless stops placed on the rudder at these angles, custom and fashion say to the navigator, "Thus far shalt thou go, but no further, and here shall all thy skill and experience be limited." If, instead of this senseless custom, rudder stops were abolished, and gear applied that would heave the rudder over 90 degrees, the navigator would then have a larger margin of rudder force to use, as special circumstances required it, and the ship would be brought more under his command in all those instances where a very abrupt turn of the ship is necessary, and this would doubtless save many a collision, and "deaden" the destructive force of many others also.

Your correspondent gives some interesting statistics of the circling of the leviathans of the *Northumberland* type. Though I am very much astonished with the results, I see no reason to doubt or question them. But, I wish here in passing, just to remind your correspondent that I have as good a right to question their correctness, as he has to question the correctness of that portion of my article, which gives my experience of circling in merchant steamers. And in reply to his statement, that, *many* think I have underrated the turning powers of a merchant steamer of 850 feet in length, I should like very much to ask him, How many? I only, as yet, know of one, and that one is himself.

The speed given in these statistics of circling is, five, eight, and ten knots, but your correspondent omits to say whether this is the speed maintained while revolving, or the speed previous to it. I find I have omitted the same thing. In my case, the speed given

of eight knots, was what the ship was reduced to, previous to heaving the rudder over. Of course it would be less while revolving with the rudder hard over. In my account, also of revolving, I stated it was for compass experiments. The time of doing so was not therefore so much my object as other considerations which I was working out, consequently I did not pretend to that perfect accuracy of statement, in respect of time, as if I had been revolving for that purpose alone. The time of doing so was, in all instances of my circling, subordinate to other considerations, and I thought it sufficient for all purposes to give a general idea. But since I seem to have somewhat startled your correspondent with the time taken by a merchant steamer to revolve, I have thought it advisable to take the first opportunity of circling with this object alone. Accordingly, in a steamer 335 feet between the perpendiculars, with a canoe bow, or fore foot, which is said by many to admit of the steamer turning more rapidly, and having, for her length, a somewhat larger rudder than the general run of steamers I have been accustomed to, I performed the experiment with the following results:—

Times Revolved.	Angle of Rudder.		Speed while Revolving.		Time Occupied.				Average for each revolution.				
					H.	M.	S.		H.	M.	S.		
3	...	25°	...	4½ knots	...	1	0	15	...	0	20	5	
3	...	35°	...	5	„	...	0	53	30	...	0	17	50
8	...	39°	...	8	„	...	0	36	50	...	0	12	17

These revolutions were all performed with the port helm; with the starboard helm the time would have been a little longer. Neither the above circling, however, nor those of your correspondent, touch the main question of the revolving power of the rudder above the angle of 45 degrees, and whether the ship would make, with a greater angle, a smaller circle. I have, therefore, taken advantage of an opportunity of revolving a steam yacht, 45 feet in length, with this object in view, and with the following results, all port helm as before:—

Times Revolved.	Angle of Rudder.		Speed before Revolving. About		Time Occupied.				Average for each revolution.				
					H.	M.	s.		H.	M.	s.		
10	...	45°	...	8 knots	...	0	18	45	...	0	1	52	
10	...	75°	...	3	„	...	0	25	0	...	0	2	30

In this experiment the circle with the greater angle was much smaller than that of the lesser, and it was only a question of increasing the speed, to make up for the increased deadening effects of the rudder, to have performed the circle in the same time; but in this case, unfortunately, it could not be done, as I had no surplus steam power to apply.

Besides the above case, I have had the opportunity of revolving a small steam tug, 55 feet in length, and I obtained from her the following results :—

Times Revolved.	Angle of Rudder a-port.			Speed before Revolving. About		Time Occupied.			Average for each revolution.		
						H.	M.	S.	H.	M.	S.
3	...	45°	...	3 knots	...	0	7	6	...	0	2 22
3	...	75°	...	3	,,	0	8	0	...	0	2 40
3	...	90°	...	3	,,	0	10	6	...	0	3 22

In this case also, the circle performed with the rudder at 75 degrees, was much less than 45 degrees, but the difference of the circles between 75 and 90 was not so apparent, in fact, I could not be certain that the circle at 90 was any less than 75. The reason that it was no less was doubtless owing, as your correspondent rightly remarks, to the water striking the rudder at an angle of its own, caused by the "contour of the run," the tug used being of good beam for her length. The circles, however, with 75 degrees in both instances, were very satisfactory, and a very slight increase of speed, if it could have been given, would have caused both yacht and tug to have revolved in the same time as at 45 degrees, with all the advantages of a much smaller circle.

These experiments show, as I expected, that the turning power of the rudder is not limited to 45 degrees, but that it is much increased with greater angles, and that the speed is naturally very much deadened also, in fact, with great angles they show there is much more turning of the ship and less going a-head, two very desirable objects to be attained in all circumstances of danger of running into anything. It is as desirable in ships as it is in railway trains, to have the power of bringing them to a dead stop as speedily as possible. Why therefore should not the full stopping power of the rudder be available? reversing the engines cannot be done

instantaneously. In many instances it takes a little time, and even if it were instantaneous action, the ship would still carry her way a considerable distance. When a man has fallen overboard, and the engines reversed full speed as quickly as possible, the ship often runs far enough ahead to lose sight of the man from the deck before she is stopped. This has been so frequently the case with me, that now, as soon as the accident happens, I send some one aloft to keep him in sight. The use therefore of all the stopping power of the rudder, would be a considerable auxiliary in all such cases, as well as in all those of the ship running into danger.

Your correspondent, it seems to me, attaches in circling undue importance to ships of very large dimensions. I attach importance principally to their excessive length. A plate of iron 400 feet long, with depth and rudder proportionate, if it could be made to float on its edge, and propelled equally through the water, would probably in revolving make as large a circle as the great *Northumberland*. On the other hand, a 10,000 ton cylinder would turn on the water with very little force, in fact, would turn like a tub, making all due allowance for its greater amount of surface, and consequent friction on the surrounding pressure of the water. I conclude therefore in circling it is length that we have principally to deal with. Depth is always equalized by having a deeper rudder.


There is only one inference to be drawn from the statistics given by your correspondent, which is this:—If vessels of the *Northumberland* type can complete a full circle, with a diameter of 415 yards, in five and a half minutes, and merchant steamers, not near their length, occupy nearly three times that time, then the former must have more proportionate rudder force than prevails with the latter. I am not aware that any other explanation could be given. The question is one only of mere rudder leverage. It would be very interesting to know the amount of square feet of rudder surface the *Northumberland* presents to the resistance of the water. It might serve as a standard for others, and also serve to show any defects in rudder leverage that may prevail in merchant ships. While ships have been growing excessively long, rudder leverage

seems to have been at a standstill ; the rudders have not grown equally with the length of the ships. I was in one steamer, 290 feet long, that took about twenty minutes to perform a complete circle ; she had a beautiful fashionable rudder, it was all tapered and cut away, and little or nothing left of it, it was about equal in turning leverage to a jury rudder, and ultimately had to be altered and made larger. There are many of these fashionable cut-away rudders in use, having very little turning leverage, and consequently endangering life and property at sea to a large extent. Why, therefore, should it not be compulsory for every ship to have sufficient rudder force for turning as promptly, and power to apply it, as prevails in those great ironclads of the *Northumberland* type.

Referring back to my first article on this subject in your October number, which started this discussion, I do not see any reason for withdrawing any of my suggestions therein contained. I still believe it would be more conducive to the safety of life and property if the navigator had the means of promptly throwing his rudder over to 90 degrees whenever his skill and experience dictated its use ; that the use of a circle or wheel on the rudder stock, under the upper deck, would be a much superior method for steering than with the ordinary tiller, and that the gear can be led to the bridge without the objectionable right-angled nips, and through cargo space with perfect safety. Since writing that article, I have seen one American steamer, the *City of Merida*, and I am told that another of the same line, the *City of New York*, have their steering gear below deck and passing through cargo space. They, however, still steer with the tiller and right-angled nips, but with the gun tackle purchase. This latter, of course, lessens the friction of one nip one-third.

“INCHGREEN,” OF GREENOCK.

LIGHTS AND CREW SPACE.

IR,—Some days ago I received an invitation to visit a sailing ship which had just arrived in the port of London laden with grain from New Zealand: and I must ask you to afford me a small corner in the September number of my old friend the *Nautical*, in which to place on record two things I had the satisfaction of seeing on board. The name of the ship is the *Inchgreen*. She belongs to William Lindsay and Co., of Greenock, in which firm Mr. D. Mac Dougall is an active partner. Her master is Captain Cook. I give these names as I think they ought to be recorded in your pages.

In talking over the subject of the Rule of the Road, I have often urged that it would be well to make the lamps, &c., for colored side-lights and their fittings, parts of the permanent structure of the ship. In steamers the cases and screens for those lights can be accurately fitted on the bridge and in a permanent manner; but in sailing ships the case is different, they are on stanchions which often get rickety. There is no reason why questions should be continually arising as to the efficiency of screens, &c., for if a permanent part of the ship is converted into a screen, and the light is accurately arranged, no question can arise. This has been done in the *Inchgreen*. It may for what I know be done in some other ships, but I have never seen it done in a merchant ship as it is in this ship. There is a small room on each side of the ship just aft of the round of the bow, and the window or port of this room forms the receptacle through which the side-light is shown. By this means the lights are well placed, are clear of all obstructions, and the lamp trimmer can at all times trim them without removing or disturbing them: he in fact goes into a room or closet in which they with their stores are kept. In some steamers, notably those on the Anchor Line, lighthouses are fitted on deck, which answer the same purposes as these light “cupboards” in the *Inchgreen*.

The next improvement on board that struck me—(indeed, I was especially invited to see it)—is that each seaman of the crew has a separate cabin to himself. It is managed in this way. The crew are accommodated in a house on deck between the fore and main-mast. The middle of this house serves as a mess-room, is fitted up with seats, a mess-table, a stove, and a lamp: and arranged round the mess-room are the sailors' cabins. Each cabin is fitted with a bed berth, a chest of drawers, a washstand, a rack for knives, forks, &c., clothes hooks, water ewer, and so forth; in fact each cabin is as complete as if it were for a passenger; and besides this there is a lock on the door of each cabin, of which the occupant keeps the key so that no one else can go into it. I visited the ship just as the crew had left her, and I was pleased to observe and to note, how clean and tidy each man had left his own cabin.

I was informed by Captain Cook that the men had behaved exceedingly well during the voyage, and many were waiting to go again to sea in the ship. Owners, by treating their crews as in this ship, not only ensure good seamen, but the men themselves take five shillings a month less as wages. The outlay for this sort of accommodation is a wise outlay, and is in many ways more than recouped by the owners.

I have thought it worth while to ask you to note the above, so that other owners may be induced to follow; and I hope I may receive invitations to witness many an imitation. The way to avoid casualty is to get and to treat well a good crew. One thing I was sorry to learn on board the *Inchgreen*, and that is that the master does not take apprentices. I wished to secure a good master for the son of a widow who had just then applied to me to help her to send her boy to sea, and it was to me a great source of regret that so good a ship as the *Inchgreen*, such thoughtful owners, and such a thorough seaman as is Captain Cook, should not place the Mercantile Marine under a fuller obligation by bringing up an apprentice or two.

Yours faithfully,

Stockwell, August, 1878.

T. G.

THE AUCKLAND ISLANDS.

HAVING recently seen some remarks about this group of islands lying to the S.E. of New Zealand and directly in the track of homeward-bound ships from Australia, referring to them as an almost "Terra Incognita," I have been led to think that the following notes may be of interest to your readers, particularly to those who command our Austral Fleet; and although what I am about to narrate was well known five-and-twenty years ago, a generation has almost passed away since then, and they may now have the appearance of novelty.

Some years since, the public mind was harrowed by the account of the sufferings of the survivors of the crew and passengers of a homeward-bound ship which was wrecked on the western side of the largest island of this group. This unfortunate ship running rapidly before one of the customary westerly gales of these latitudes, from some cause or other which need not be discussed here, suddenly discovered looming through the midnight gloom, the precipitous cliffs of Enderby Island. The proximity of the danger, and the rate of speed, precluded any chance of clearing them by manœuvring, and the only hope of safety lay in letting go both anchors, which was promptly done. These held for a short time, but then the doomed ship began to drag. As they drifted in they saw before them a monster cavern, into which slowly but surely they were driven by the force of the westerly gale before which they had so recently been speeding, with the fairest prospects of a speedy run round the "Horn." At first there was room for their mastheads to rise and fall with the swell clear of the roof of the cavern, but gradually the roof became lower, the masts came in contact with it, and were driven through her bottom. The result was calamitous, some boats were got out, and some of the crew and passengers succeeded in pulling out of the cave, but the greater part miserably perished, by one of the most peculiar kind of shipwrecks recorded. The survivors found a landing place outside the cavern, but met with a dense impenetrable scrub that prevented their getting far from the spot they landed at; and there for many, many months, I think for more than

twelve, they managed to subsist in the most miserable manner, until providentially rescued by a passing vessel. Many an anxious shipmaster pricking off his position as he is passing the meridian of these islands, and remembering with a shudder the fate of those I have just narrated, would be surprised to hear that at the N.E. part of the largest island of the group, Enderby Island, there is one of the safest harbours in the world, perfectly safe to enter, and free from hidden dangers ; having at its south-western extremity several land-locked bays where a fleet of ships may ride with perfect safety.

Such however is the case. Nearly thirty years ago such a fleet did ride there, among them being H.M.S. *Havannah*, Captain Erskine, one of her junior officers at that time being (if I mistake not) the present Lord Ashley. The rest consisted of some six or eight full-rigged whale ships, as many store and passenger ships direct from London, others from Sydney, with live stock and other supplies, and a mosquito fleet of schooners, &c., from that and other Australian ports, filled with all sorts of goods on venture. A Lieutenant-Governor with a Royal Charter reigned on shore, and bustle and activity prevailed.

At the beginning of this century and for some years after, whaling in the South Seas was a very profitable business, and the shipowners of the port of London prosecuted it vigorously. Among the principal of these was the firm of Enderby of Greenwich. One of their commanders had discovered this group of islands, naming the principal one Enderby Island, and, following the custom of earlier times, gave the name of "Sarah's Bosom" to the fine harbour he refitted in, and, considering the stormy weather always to be met with in these latitudes, was neither inappropriate nor ill-deserved. This trade had all but ceased, as whales had become scarcer, but as oil became dearer, the Enderbys of thirty years ago bethought them what a fine station for renewing their old business this group of islands would make. For this purpose a company was formed, a grant obtained from the crown of the islands, and one of the firm appointed as Lieutenant-Governor. Shares were taken, the company formed, ships chartered, houses and stores in frame shipped, licenses granted for intending emigrants and shareholders to deal in everything and

anything, "whalers" fitted, crews engaged, and every effort made to secure in the new settlement a permanent fishing station and a prosperous colony. Everything was considered except the nature of the climate, and the bad weather prevailing there throughout even the finest period of the year.

In December, 1849, the good ship *Artemesia* was chartered by this company, through their Sydney agents, to carry live stock to the adventurers who were expected to arrive about that time, and had shipped on board 80 head of cattle, some 400 sheep and four horses. It was a sort of voyage of discovery, for although there appeared the name of "Sarah's Bosom" on the charts, no one knew what kind of a place it might be. A Captain Touns, a well known Sydney man in those days, had once had one of his whalers touch there, so he knew there was such a place, but beyond this nothing was known to us. With no better instructions we started with our living freight, which required constant attention, and for which purpose an experienced stockman and several assistants were engaged for the passage. Running south at once, we soon reached the belt of westerly winds, and shaped our course for the islands. At daybreak on a Sunday morning we sighted them, with a westerly gale behind us, and blinding squalls of hail, sleet, and snow, obscuring our view of the land as they passed over. As we ran past the N.E. end of Enderby Island, we put two reefs into our topsails and reefed our courses ready to haul up at any moment. As the land began to trend away to the south-eastward we saw a bold opening in it, stretching as far as we could see to the S.W. "This must be 'Sarah's Bosom!'" We saw it but for a moment—just in time to haul up for it. It was an anxious quarter of an hour—flying as we were under our reefed canvas to a spot we could not see; so we hauled up our courses, and close reefed, and went as slowly as the gale would permit. The squall passed, the sun shone brightly, and there, right before us, lay "Sarah's Bosom." In a few minutes we were within the shelter of the north-western headland, and although the gale still blew with violence we were well sheltered, and were in comparatively smooth water. From the masthead nothing like shoal water could be seen, and we proceeded on.

We had been told that a pilotage service had been provided, and when about three or four miles up the inlet we saw a whale boat, and shortly a person, who said he was the pilot, stepped over the rail and took charge. Here the harbour trended more westerly, and we had to make a board or two, when the pilot had to give up handling the ship, he not being well acquainted with square-rigged vessels, as he had only been a plying waterman in London before he came out with this expedition. We soon sighted the vessels at anchor in the head of the harbour, and the pilot telling us there was nothing to fear except the shore on either side. Having moored with two anchors the first thing to do was to send down topgallant-yards and masts, as the wind rushed down upon us with tremendous violence, in stormy gusts, every few minutes. We were warmly welcomed. The various vessels from England had all arrived, but the crews and settlers were still living upon ship's rations, and the arrival of our fresh supply was anxiously looked for. Most of the ships had had a long voyage, and instead of meeting with a pleasant change on their arrival found themselves unable to advance a yard from the beach without cutting a road through a dense, scrubby undergrowth, which you could barely scramble through on your hands and knees. Seals were plentiful on the beaches, but so unaccustomed to molestation from man that they did not even attempt to avoid them. By the time we arrived they had erected a residence for the Governor, and some shanties for themselves and their stores, but not without some mistakes, as in some of their earlier attempts they had placed the corrugated iron roofs on in such a way as to conduct the rain into instead of off their new houses. Their attempts at whaling had not been successful; one of the ships had been south, and returned empty, having seen numerous fish, but with such boisterous weather as not to be able to lower a boat after them; another had proved so crank and tender that she could not properly strip the blubber. On shore things were not working well. Most of those who had taken shares and come out with the expedition had brought out goods to enable them to open stores, but the only thing that commanded a sale was liquor, and as each man erected his store

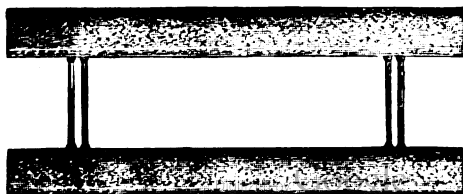
and got his goods on shore, he became a free trader in spirits. In framing the proposed settlement it appears that no thought had been given to this, and the result was that the Governor, seeing the evils this state of things was sure to produce, had, in his endeavour to improve matters, become very unpopular. In exercise of his authority he had punished one offender by banishing him to a small island in the Bay, but a strong feeling had sprung up, and things were almost in a state of mutiny when H.M.S. *Harannah* arrived and restored order. When the weather improved somewhat we landed our cattle by the simple process of putting them overboard, when they swam ashore and at once were lost sight of in the dense bush. This was a mistake, as was soon seen. Christmas Day coming on, the Governor wanted some beef, when it was found impossible to get a sight of one of them, no one being able to follow them through the dense scrub, even to get a shot at one of them. The sheep were afterwards landed at a small island where they could not get away. I am inclined to think that there must be descendants of these cattle there still, as I don't think that, considering the short time that elapsed before the whole enterprise was abandoned, they could have been all captured or killed, and I should not be at all surprised to find these islands well stocked with wild cattle. The expedition expected to find these islands quite uninhabited, but on their arrival found two Maorie families there who had been drifted there from the Chatham Islands. They resembled the New Zealanders, and were tatooed like them. During our stay several exploring parties visited other parts of this deep inlet, finding numerous well-sheltered bays like the one we were at anchor in, but all clothed to the water's edge with impenetrable scrub. The birds were numerous and very tame, having no fear of man at all. The most common was a bird somewhat like an English blackbird, called by the New Zealanders the "Tui"; it is very imitative and can be taught to whistle tunes. During our stay the weather was of a most tempestuous character, although the summer season (January), blowing a gale of wind almost the whole time, with violent hail storms, rendering the place, notwithstanding its secure anchorage, a most unfit place for a refitting station for a fleet of "whalers,"

and most distasteful to the crews, who looked for some more favoured spot to spend their liberty time in. As it is not my intention to give a history of this company nor the causes of its collapse, it will be sufficient to mention that not long after the period I have described, the enterprise was entirely abandoned and the islands left to their primitive desolation, as I believe that the two native families, who had been driven from the Chatham Islands, availed themselves of the opportunity and left also, after their involuntary sojourn in one of the most desolate spots in the Southern Sea. Had the shipwrecked crew mentioned in the beginning of this paper but known of the existence of such a harbour as I have described, they might have reached it with their remaining boats and found shelter at any rate, which, compared with their exposed position on the western coast, exposed to the never-ceasing storm, would have proved to them a "Sarah's Bosom" indeed.

JOSEPH LEEMAN.

THE "SAVE-ALL."—A NEW LIFE-BUOY RAFT.

IN various articles which have from time to time appeared in our magazine on the subject of saving life at sea in very sudden emergencies, we have suggested that something, which we called a "Save-all," should be provided, whereby the crew and passengers, however numerous, might, in cases like those of the *Northfleet*, *Deutschland*, *Schiller*, and now *Grosser Kurfurst*, be buoyed up until help could arrive. The trouble always has been that the buoys or rafts or seats, or whatever they might be, would encumber the decks or be in the way, or be stowed where they could not be reached. Mr. Birt, who is the principal manufacturer of life-saving gear in the kingdom, has just brought out an article which is shown in the figure below.



Each "Save-all" is six feet in length and has a buoyancy of over 360 lbs., and is capable of sustaining ten men, with their heads and shoulders well above water. Mr. Birt proposes to secure these ladder-like life preservers outside the bulwarks with the cylinders lying horizontally one beneath the other, and so as to form two continuous beadings or bands all round the bulwarks, or as nearly so as the fittings of the ship will admit. By this means he thinks a large number can be carried without inconvenience or being unsightly. They can be secured by lashings, which can be cut, and thereby instantly released; or, if thought more desirable, they can be secured by a bar or button placed on an axis, which being turned will at once release them. These fastenings can be connected by a rod, under the control of one or more of the officers only, and the whole of the life-buoys would be released simultaneously.

These "Save-alls" are constructed in such a manner that it is immaterial which way they fall in the water, and the horizontal cylinders being held rigidly together by means of metal tubes, they possess not only great stability but the men clinging to them can readily support themselves at the sides, and they can get in easily between the ends, and thereby be supported more effectually, and with less fatigue, than with any other form of life-buoy. Mr. Birt claims for this, that it does not occupy valuable space or interfere with the stowage of more important articles. It is not unsightly. It is always ready for use both by night and day, and requires no fitting when brought into use. It is not unhealthy. Under the head of it being inconvenient or uncomfortable there can be no objection. Each piece of six feet in length, has a buoyancy of over 360 lbs., and as there is ample space along the bulwarks—say 300 feet run on each side of the ship—to place the apparatus, there would be sufficient buoyancy thrown into the water instantaneously to support 1,000 men. It would be very inexpensive as to its first cost and annual repair. It is not affected by climate or rough treatment, and would be covered with canvas, and painted same as the ship.

At present so far as we know this invention is only in its experimental stage, but it is not improbable that a large foreign man-of-war will be fitted up with something of the sort immediately.

SHIPBUILDING, 1878.

SAILING SHIPS.

Name of Port.	No. of Ships first six months.	No. of Ships corresponding period last year.	Gross Tonnage first six months.	Gross Tonnage corresponding period last year.
Aberdeen ...	2	3	2,124	2,879
Banff ...	8	8	1,589	1,555
Barrow ...	2	3	472	1,759
Belfast ...	1	3	1,719	4,871
Bristol ...	1	2	16	120
Cowes ...	8	5	201	176
Dartmouth ...	27	29	2,190	1,878
Dundee ...	2	5	1,241	2,939
Faversham ...	15	11	665	492
Glasgow ...	80	24	81,176	22,069
Greenock ...	4	6	8,355	4,162
Grimsby ...	20	24	1,489	1,850
Hartlepool ...	—	2	—	2,740
Hull ...	23	17	1,762	1,284
Jersey ...	2	3	136	129
Liverpool ...	10	13	7,872	10,366
London ...	30	20	1,357	861
Middlesbro' ...	—	1	—	1,444
Newcastle ...	—	—	—	—
Plymouth ...	8	3	535	189
Port Glasgow ...	5	6	4,335	7,969
Portsmouth ...	2	4	88	206
Rochester ...	7	12	274	580
Rye ...	12	12	698	651
Southampton ...	—	6	—	4,641
Stockton ...	1	1	1,499	1,487
Sunderland ...	16	12	11,808	11,054
Whitehaven ...	2	3	2,104	2,554
Workington... ..	—	2	—	1,884
Yarmouth ...	20	13	959	629
Other Ports ...	97	76	10,228	7,524
Totals	350	329	89,842	100,892

SHIPBUILDING, 1878.

STEAMSHIPS.

Name of Port.	No. of Ships first six months.	No. of Ships corresponding period last year.	Gross Tonnage first six months.	Gross Tonnage corresponding period last year.
Glasgow ...	57	89	48,533	25,576
Greenock ...	11	9	12,312	4,105
Port Glasgow	17	9	7,896	8,772
Sunderland	80	24	86,807	29,103
Newcastle ...	84	22	42,658	25,439
North Shields	18	4	10,679	1,477
South Shields	7	12	2,980	2,698
Liverpool ...	7	5	5,734	6,096
Dundee ...	6	7	6,035	3,136
Hartlepool ...	14	8	19,270	11,435
Aberdeen ...	8	1	1,680	255
London ...	11	4	752	362
Belfast ...	1	1	8,349	55
Stockton ...	9	—	11,761	—
Middlesbro'	6	13	5,026	12,635
Hull ...	8	—	3,557	—
Barrow ...	8	6	10,769	7,415
Whitby ...	8	8	4,243	4,174
Southampton	6	2	2,711	245
Leith ...	6	—	1,309	—
Other Ports	17	12	1,409	1,654
Totals :—				
Steamships	274	181	239,470	139,682
Sailing Ships	350	329	89,842	100,892
Grand Total	624	510	329,312	240,574

CORRESPONDENCE.

CERTIFICATES OF SERVICE AS A.B.

To the Editor of the "Nautical Magazine."

SIR,—I observe that Certificates of Competency are being issued to able seamen who succeed in passing a Voluntary Examination at Tower Hill, and while such a scheme cannot but be beneficial, so far as it goes, I am afraid that no system of examination, however simple, will ever become so popular with the men as to make any perceptible difference in their efficiency. Would it not be better to reserve Certificates of Competency for Officers and grant Certificates of Service as A.B. to those seamen who could prove V.G. service at sea for a certain number of years, making it obligatory that a portion of the stipulated time should be served in square-rigged sailing vessels?

These certificates should be cancelled for desertion and other grave offences, and probably masters and men would attach more importance to them than to the ordinary Certificate of Discharge.

I am, Sir,

Your most obedient servant,

D. S.

August 9, 1878.

A ROUND-ABOUT LETTER.

To the Editor of the "Nautical Magazine."

SIR,—Seeing you take such an interest in the welfare of those belonging to the Mercantile Marine Service, there is a subject I should like to bring under your notice on which we have already had some little conversation, I allude to the formation of a Master Mariners' and Officers' Shipping and Investment Company, to enable them to invest their savings in a line of business of which they have some knowledge. It might also be extended to the seamen. For instance, a man comes off a voyage and has perhaps sixty or eighty pounds to spare, he does not know where to invest it or perhaps has not time to do so; and what is the result, the

money is spent in one way or another, and when he goes to sea he has nothing to show for it; he had not enough to take a share in a vessel, so knocks it down; whereas if a company were formed to induce seamen to invest, and so make some provision for their wives and families, I think it would do good. The men would then have a vested interest in the work in which they were engaged, would be less likely to run away in a foreign port, and they could increase their interest from time to time with advantage without inconvenience. Why should shipmasters and officers be dependent upon charity when they get old and past service? Why should their widows be obliged to take to keeping lodging-houses, or their children sent to orphan asylums? Is it not for want of forethought, which arises in a great measure from our mode of life? When at sea the rent is paid and food provided, no taxgatherer calls to dun for rates, and so from habit men get thoughtless and thriftless, and not from any bad intention. That such a company could be formed and worked with advantage I have not the slightest doubt, and the capital increased continually. The men could be kept in employment, in sailmaking, rigging and refitting, and stowing the cargoes, painting, and many other ways. In course of time the company could be their own insurers; insurance on seamen's lives might be taken, a fund raised for the aged and infirm, or those disabled by accident, and many other benefits. Money might be received on deposit for stated periods at a fair interest from the men, if they did not want to invest all their spare cash; these are merely thoughts I would like brought under the notice of our Mercantile Marine. When I was in England, about four years ago, many shipmasters approved of the scheme, but my being comparatively a stranger in England, having sailed so long out of the Colonies, I found it hard to bring the matter forward.

Touching the management of sailors—either refractory or negligent, or abusive, I think it is time that shipmasters should meet together and endeavour to get some *law* passed to deal with such characters. It is my opinion it would be well to have sailors pass an examination and have them classed as boy, O.S. A1, O.S. A2, A.B. A1, A.B. A2, boatswain, and boatswain's mate; and

have them registered *upon* the certificate of register with their description, age, etc., and no seaman should be allowed to have more than *one certificate of discharge* in his possession at the time, so as to prevent their being transferred from one to the other; such discharge should correspond with the certificate, and in case of desertion or imprisonment, it should be endorsed on such certificate; for while I would treat a sailor with every kindness, I hold it necessary that the master should have proper power to keep due discipline on board his ship for the safety of the lives and property under his charge, which at present I do not consider he has. There are many other matters connected with the responsibilities of a shipmaster which would occupy too much space to go into, and would perhaps be better discussed at a meeting of shipmasters, so I will draw this to a close.

I remain, dear Sir,

Yours truly,

WILLIAM A. MARTIN.

Port Lyttelton, New Zealand,

April 12th, 1878.

LOSS OF THE "KAFFIR," S.S.

To the Editor of the "Nautical Magazine."

SIR,—In your issue for this month I find "*Kaffir*, s.s.; lost near Cape Point. Loss attributable to the master's default." Will you permit me to bring one or two facts to your notice? The general opinion amongst nautical men is, that the finding of the Court was against all the evidence. Since the affair happened, it turns out that the coast between Cape Point and Table Bay has not been properly surveyed, and that the Admiralty Charts are incorrect. At that portion of the coast on which the *Kaffir* struck the out-lying danger is marked at two-fifths of a mile. The *Kaffir* by all evidence was certainly *two* miles from the shore, and as an old coaster I should consider that a fair margin. Personally speaking, I have passed that place eighty times at least, and frequently at no greater distance. Well, Sir, since this accident one

of H.M. ships has been looking about the place, and discovered that a rock, known in the neighbourhood as the "Albatross Rock," is some considerable distance further out than any danger is marked on any chart, and *that* survey was very far from being exhaustive. If you turn to the evidence which I enclose, you will find that the evidence of the super-cargo clearly states, that when the engine-room was left the ship had not struck, and the engines were still going, he stating the time as five or six minutes before the ship struck, that would give another six minutes to the chief engineer's time. The opinion of the Court that proper vigilance was not used in the navigation of the ship is decidedly embarrassing. What is "proper vigilance," if steaming along a well-known coast in broad daylight, with the captain in charge of the deck, is to be found fault with? The Court complained that no officer was on the bridge. Now, I happen to know that one of the first captains that had that ship on the coast would not permit his officers to keep watch on the bridge, but made them remain on the poop, where they were close to the standard compass and the man at the wheel, as the *Kaffir* steered aft; and I scarcely think any great blame can be attached to a man for not having taken continuous cross bearings of a coast that was always—until this affair—regarded as free from any, except a few well-known and well-shunned dangers.

There have of late years been many wrecks of large steamers on the South African coast, and public opinion is apt to run wild, not always in a just direction; in fact, notorious instances have happened to the contrary, and the men with least excuse come off best. But I would suggest, that seeing dangers have been discovered much further out than was imagined, it would be a simple act of justice to restore the certificate of the ex-master of the *Kaffir* with an acknowledgment that it was at least *hastily* suspended. For, Mr. Editor, the competition on that coast will not admit of a master jogging along seven or eight miles clear of all headlands; if passages are to be made, it is a case of "get in shore out of the current," and with a vessel that is not very fast, to disregard that maxim means to lose daylight at the next port, and lengthen the passage considerably.

I have by me now a letter from the captain of one of H.M. corvettes, in which he says, "They are accustomed to consider ten miles off a fair offing for a coasting voyage. As to not having a look-out on the bow in broad daylight, I never heard of such a precaution except when a ship is feeling her way along an unsurveyed coast, and then there would be leadsmen in the chains, and other precautions which would have been totally inapplicable in the case of the *Kaffir*." Such is the idea of an impartial observer. I do not think I have at all overstated the case, although the master of the *Kaffir* was an old brother officer, but if that ship was a mile or upwards from shore at time of striking, and the evidence proves she was at least two, I fail to see default on the part of the master, or why his certificate was suspended.

I am, Sir,

Your obedient servant,

W. C. C.

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MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, to whom all communications should be addressed.

ENGLISH (APPLICATIONS).

2789. Geo. Daniel Davies, Commercial Road East, London, Engineer. "Improvements in cable stoppers."

2821. Jas. Dundass Grant, Edinburgh. "An improved method of propelling ships by wind."

2842. Wm. Alexander Brice, Paris. "Improvements in apparatus for lowering and detaching ship's boats, partly applicable for other purposes."

2846. Henry Allington Harvey, Plymouth. "Improvements

in compositions for coating the bottoms of navigable vessels, and the submerged portions of floating and fixed structures."

2847. Benjamin Barton, Brewer, Sacramento, California. "Improvements in and appertaining to propelling vessels and apparatus therefor."

2848. Edward Davies, Liverpool, Engineer. "Improvements in and appertaining to boats or vessels for navigating canals, rivers, or like places, and in the mode of propelling the same, applicable also to sea-going vessels."

2871. Henri Felix Louis Worms de Romilly, Paris. "Improvements in propelling and steering vessels and in obtaining motive power for other purposes."

2888. Wm. Francis Reynolds, 547, Commercial Road East, London, Nautical Instrument Maker. "Improvements in ship's compasses and in apparatus for finding the deviation thereof."

4928. Alfred Wm. Birt, 42, Dock Street, London. "Improvements in life-buoys and in apparatus connected therewith."

2934. Franklin Hocking, London, Engineer. "Improvements in and appertaining to condensers for obtaining fresh water from salt water."

2967. Dixon Trovand, Lima, Peru. "Improved machinery for distilling liquids, especially for distilling fresh water from salt or sea water."

2976. Henry Arthur Clark, West Cowes, Painter. "Coating ship's bottoms."

2982. Harry Robert Newton, 43, Seymour Street, Hyde Park, London. "Improvements in the manufacture of cork apparatus and all kinds of garments for preserving buoyancy in the water and otherwise."

3013. John Macintosh, Bayswater. "Improvements in buoyant appliances and articles for saving life from drowning, partly applicable to other purposes."

3016. Rev. David Greene Hoskins, D.D., Boston, Mass. "An improved lifeboat and signal-buoy."

3019. John Wallace Douglas McDonal, Rear-Admiral, R.N., Bembridge, Isle of Wight. "Improvements in folding boats or vessels."

3050. John Donaldson, of John J. Thorneycroft & Co., London.
"Improvements in the steering arrangements of vessels."

3052. Charles Busbridge, Lawton. "New or improved balance mechanism for maintaining equilibrium during the rolling and pitching of a vessel at sea, applicable to furniture, cabins, and other like purposes."

3088. Captain Joshua Nickerson Rowe, Rockland, Me., U.S.
"Improvements in and relating to apparatus for supporting and propelling the human body on and through the water."

3098. Salvatore Garau, of Samassi, Sardinia, but at present of Stockwell Park Road, Brixton. "Improvements in means of raising sunken vessels and in apparatus therefor."

3108. Michael Watson, Newcastle-on-Tyne. "Improvements in apparatus for steering ships, applicable also to the reversing gear of steam-engines, hoists, and other machines."

3110. Dr. Paul Friese and Dr. Carl Scheibled, Berlin. "Improvements in putting into motion small engines, submarine vessels, and torpedoes by means of liquid sulphurous acid."

3116. Gilles Louis de Naupeon D'Ableiges, of Cherbourg.
"Improvements in the mode of and apparatus for removing cinders, scorïæ, clinkers, and other waste materials from steam and other ships."

3117. Wm. Flux, Hale, near Farnham. "Improvements in life boats, which improvements are also applicable to other vessels."

3129. Jas. A. Rigby, of Carson, Ormsby Co., Nevada. "Improvements in means and apparatus for regulating and controlling the speed of marine and other steam engines."

3137. John Kirkpatrick, Roger Kirkpatrick, John Bradley, and Levi Kirkpatrick, of Little Leved. "Improvements in pontoons used for raising sunken ships."

3172. George Donkin and Bryce Gray Nichol, Newcastle-on-Tyne, Engineers. "Improvements in steering apparatus, and in apparatus for starting, stopping, or reversing steam or other engines."

3173. John Gilbert Surman, No. 1, Amersham Road, New

Cross, Kent. "Subaqueous warfare, in attaching torpedoes to ships, forts, or any other hostile objects, in order to determine their destruction."

ENGLISH (ABRIDGEMENTS).

4497. James Humphrys, Barrow-in-Furness. "Improvements in the construction of iron, steel, or other ships." This invention consists in constructing ships by the use of flanged plates in conjunction with angle irons, stringers, keelsons and beams, in lieu of the ordinary method of bending the floor and frames, the joints or meeting flanges of the said plates being so disposed either longitudinally, vertically, diagonally, or otherwise, that mechanical rivetting can be readily applied. The vessel is built under a roof, between packings or fillings, corresponding to the shape of the vessel, and against which the flanged plates are rivetted by power from the inside. Frames and beams are introduced at intervals to stiffen the ship.

4503. George Vincent Fosberg. "An improved manner of protecting gunboats, torpedo boats, and similar vessels from the effects of rifle shot and other projectiles." This consists in covering the boats with sheet rubber. A sheet or layer of kamptulicon being, however, interposed between the boat's sides and the rubber, so that when struck by a shot, the pierced portion of the rubber and kamptulicon shall form an elastic valve, which instantly closes, preventing the influx of water into the boat.

4590. Edmund Thompson, 27 Leadenhall Street, London, Shipbroker. "Improvements in the construction of vessels or boats and rafts, and in the launching and lowering of boats and rafts, from on board ship into the water." The vessels are constructed with cellular sides and bottoms for strength. The screw propeller is preferably placed in a channel under the bottom. Two of these vessels can be coupled together by girders, if required, and deck over all. For launching the boats from the ship a sliding platform, sliding on rollers, is used. The boat rests on the platform, which is slid partly over the vessel's side and tipped to allow the boat to descend into the water. The platform

can be used as a raft. For lowering boats into the water, instead of the sliding platform, he uses falling davits hinged to the vessel's sides and capable of being canted over from the vertical to the horizontal position, thus bringing the boat into the water.

4737. Percy John Wates, of Greenwich. "Improvements in the arrangement and construction of apparatus for discharging coals, grain, and other similar commodities, from ships' holds, and transferring them to barges or other receptacles." This consists of a trestle, constructed with legs telescoping into each other, and carrying a platform at the top, which, by means of the telescope legs, is made adjustable to any height from the ship's deck. A shoot is attached to the platform, and rests on the vessel's rail, so that buckets may be raised and tipped into the shoot which discharges the stuff into lighters alongside.

4792. Rev. Archibald Henry Hamilton, Cavan. "Improvements in ships or vessels." In order that the force of the wind shall be available to the maximum degree for propelling the vessel, the sails are arranged at an angle to the vertical, having the normal to their plane passing through the metacentre or near it; and they are by preference made of a hemispherical segmentospherical or other curved form, with the concavity directed towards the wind, and the horizontal curvature or bulge of the horizontal yards reversed at the hinder end of the sail, the hinder curvature being prolonged if necessary, in order to maintain the vessel's head right, thus acting after the manner of a kite.

4947. William Wesley Shoe, Philadelphia, U.S. "Improvements in apparatus or mechanism for steering and propelling boats or vessels." The applicant's American patent was fully described in our list some months ago.

4727. John Harmanns Fisher, of Baltimore, U.S. "Improvements in means of protecting the hulls of vessels from torpedoes, applicable also for increasing the buoyancy and carrying capacity of vessels." This consists of a series of pipes projecting all round the vessel's sides, and arranged according to the contour of the vessel. If torpedoes strike the pipes, they are exploded at some distance from the vessel's side, and consequently do not harm her.

By filling the pipes with air the buoyancy of the vessel is increased. By filling them with water it serves to immerse her deeper.

24. David Carroll, Spring Creek, Penn. "Improvement in ships logs." This consists of a tube passing through the vessel's bottom and containing two screws or wheels, placed with their axes at right angles to each other, the upper one being arranged to indicate the forward or backward direction, and the lower one the leeway when drifting. A speed indicator is placed below these; suitable gearing is arranged to indicate on scales and dial the action of the apparatus.

25. Fidèle Motte, Bruxelles. "Improvements in the mode of propelling ships and other vessels through the water, and in apparatus therefor." This consists in placing a turbine and a screw on one shaft at the bow, the turbine being placed before the screw. The object being for the turbine to create a void or remove the pressure in front of the vessel, and the screw to pull her through the space made in the water. To aid the motion two inclined screws are placed at the stern.

570. Schaffer and Budenburg, Buckau-Magdeburg. "Improvements in pyrometers for marine engines." This rather complicated apparatus is designed to be placed upon the bridge, and is arranged to indicate whether the engines are working, which way they are going, the time, the total number of revolutions, and the number of revolutions for any given fraction of time. For this purpose the engine shaft operates the apparatus by a combination of clockwork and electro magnetism, in a way that cannot well be explained without the drawings.

4854. William Smith Melville, 9, Frederick Place, Mile End Old Town, London. "Improvements in the means of and apparatus for hoisting and lowering yards or gaffs of steam and sailing vessels." This invention consists in having two parallel tubs or buckets of wood or iron, so arranged on the mast that they will oscillate freely in the direction of the yard, always keeping square or flat to the mast, being attached by truss bows to a perpendicular bail or stud connecting the truss bows, on or in which stud or bail the yard swivels or peaks. By this means the inventor minimises

the chafe on the mast, the tub working evenly and the yard bracing sharp up with ease without straining the tie or halyards.

AMERICAN.

177869. James McNabb, Winder, Canada. "Compasses." This consists of a system of levers, &c., attached to the compass actuated by a float or feather under the vessel's bottom, so that the leeway of the vessel and her true course are indicated. The needles are placed at the south side of the card, with a space between them, and point directly to the centre pin, and by this construction are beyond the influence of local attraction.

203660. Gorham S. Sidelinger, Chelsea, U.S. "Anchors." This consists in constructing a short broad body of cast metal, in place of the long shank and stock usually employed. It is of nearly heart shape, the apex being near the flukes, so that a chain cannot foul it.

203875. John Baird, engineer, New York. "Bearings for screw propellers." This consists in shortening the false stern-post and rudder, and in so mounting brasses in the false stern for the shaft to revolve in, that the shaft itself serves to stiffen the false stern-post and keep it from bending. From the peculiar arrangement of the bearings no water can enter them, consequently they cannot be injured by sand or silt getting in.

204180. Adam Wingard, San Francisco. "Paddle wheels." The invention consists of two circular rims or blades, secured one to each wheel rim, and are crimped or bent on their projecting portions at intervals, so as to form flaring mouthed cells all round the periphery. This produces a fish-tail action, the cells holding a solid body of water, which reacts against the water in which the wheel is immersed. The invention admits of comparatively narrow wheels being used.

204290. Sidney R. Brooks, East Marion, N.Y. "Clew-line leaders." It consists in a plate or body perforated to encircle the clew-line, and with an anti-friction roll on the bearing side of the said perforation to run upon the clew-line, the body recesses at the end opposite the anti-friction roll to fit on to the edge of the sail, and constructed with an opening at each side, by means of which the leader may be made fast to the sail.

204296. Richd. Wm. Cowan and Charles Page, Montreal. "Paddle wheels for balloons and submerged vessels." The paddles or floats are secured radially to a shaft at each side of the vessel. In shape they somewhat resemble a tennis bat. Projections are placed on the paddles, which are caused to turn or feather by striking against a bar projecting from the vessel's side. This bar can be adjusted so as to cause the projections on the wheel to strike it a different way, thus reversing the direction of the vessel without altering the direction of rotation of the shaft.

204575. Wm. L. Hull, Hinds Co., Miss. "Propellers." The blades are right-angled triangles, which are attached spirally at their right angles to a boss on the shaft, and have one of their sides arranged radially and extended from said shaft at right angles, so as to form, with the hypotenuse, laterally projecting tapering blades, the rear and less acute apices of which are deflected away from the shaft.

BELGIUM.

45862. L. Somzée. "Modifications and improvements in steam boats, &c."

45688. A. F. Yarrow. "Improvements in steam boats or vessels."

GERMANY (PATENTS GRANTED).

1789. F. G. Odemar, Magdeburg. "Improvements in Buchanan's paddle wheels for adjusting the paddle."

2244. J. Latimer Clark and J. Stanfield, London. "A floating dock, with moveable sides."

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
213	ENGLAND—South Coast—Isle of Wight—Sandown Bay	Discovery of shoal ground.
214	" West Coast—Bristol Channel—Scarweather Light-Vessel	New siren fog-signal.
215	IRELAND—West Coast—Galway Bay—Straw Island	New light.
216	FRANCE—North Coast—Seine River—Honfleur	Temporary light on breakwater.
217	NORTH SEA—Schelde River—Borsele Point	Limits of light.
218	" Maas River—Hook of Holland Canal	Alteration in position of lights.
219	" Netherlands—Maas River—Noord Pampus	Light-vessel altered in position.
220	" Jade River—Genius Bank	New light-vessel and fog-signal.
221	" " Varelersiel	Alteration of high light.
222	BALTIC—Gulf of Finland—Barö Sound—Renskar	Light temporarily discontinued.
223	PORTUGAL—River Tagus—Lisbon Bar	New leading lights.
224	NORTH ATLANTIC—Azores—St. Michael—Ponta Delgada	New light on breakwater.
225	MEDITERRANEAN—France—Toulon	New light-vessels.
226	" Bonifacio Strait	Reported sunken dangers.
227	ADRIATIC—Malamocco—Spignon Channel	Alterations in light.
228	BLACK SEA—Soujak Bay	Torpedoes and regulations.
229	AFRICA—South West Coast—Cape of Good Hope—Olifants Bosh Point	Examination for shoals.
230	" South Coast—Kowie River—Port Alfred	Harbour light on West Pier.
231	INDIA—Bay of Bengal—Hooghly River	Fog-signals and distinguishing marks for light-vessels.
232	MALACCA STRAIT—East Coast—Pulo Lumaut	New light.
233	CHINA—East Coast—Wusung River	Alteration of light and outer bar buoy.
234	AUSTRALIA—South Australia, Investigator Strait—Althorpe Island	Exhibition of light postponed.
235	" South Australia—Rivoli Bay—Penguin Island	New light.
236	" East Coast—Queensland—Cape Melville	New light-vessel.
237	NEW ZEALAND—Middle Island—Timaru	New light and old light discontinued.
238	UNITED STATES—Pacific Coast—Oregon—Humboldt Bay	New automatic fog-signal.
239	NORTH AMERICA—West Coast—Mexico—Acapulco	Light discontinued.

NAUTICAL NOTICES.

213.—ENGLAND.—*South Coast.—Isle of Wight.—Shoal Ground in Sandown Bay.*—On re-sounding Sandown bay in connection with the operations for raising the wreck of H.M.S. *Eurydice*, shoal ground with a least depth of 24 feet has been found to exist about three-quarters of a mile from the nearest shore of the bay.

This shoal, with from 24 to 28 feet (low water ordinary spring tides), on a chalk bottom, has 6 to 8 fathoms around. It extends nearly 3 cables in a N.W. by W. and S.E. by E. direction, with a breadth of half a cable; its western extreme, on which there is the shoalest water (24 feet), lies with the following bearings. Culver cliff, N.E. by E. $\frac{1}{2}$ E., distant $1\frac{1}{10}$ mile; Sandown fort, N.W. by N.; Sandown barrack battery, W. by N. $\frac{1}{2}$ N.; Dunnose, S.W. by W.

Note.—The shoulder of Appuldercomb hill, in line with Shanklin railway station bearing W. $\frac{1}{2}$ N., leads a quarter of a mile seaward of this shoal. *Variation*, 19° W.

214.—ENGLAND.—*West Coast.*—*Bristol Channel.*—*Fog-Signal on Scarweather Light-Vessel.*—A siren trumpet fog-signal has been established on board the *Scarweather light-vessel*, and will be sounded during thick and foggy weather, giving two blasts in quick succession every two minutes.

215.—IRELAND.—*West Coast.*—*Galway Bay.*—*Light on Straw Island, Arran Isles.*—On and after 1st September, 1878, a light will be exhibited from Straw island, Killeany bay, Inishmore. It will be a *fixed red* light, elevated 30 feet above the sea, and should be visible in clear weather, from inside the Arran isles, between the bearings of E. by S. $\frac{1}{2}$ S. and N.W. from a distance of 6 miles. The lighthouse and dwellings are painted white. Position, lat. $53^{\circ} 6' 56''$ N., long. $9^{\circ} 37' 45''$ W. *Variation*, $24\frac{1}{2}^{\circ}$ W.

216.—FRANCE.—*North Coast.*—*Seine River.*—*Light on Breakwater, Honfleur.*—A light is now temporarily exhibited from a wooden building, at the extremity of a breakwater in course of construction at Honfleur. It is a *fixed green* light, elevated 18 feet above high water, and visible 8 miles. Position, lat. $49^{\circ} 25' 34''$ N., long. $0^{\circ} 18' 55''$ E.

217.—NORTH SEA.—*Schelde River.*—*Limits of Light on Borsele Point.*—The *fixed* light exhibited on Borsele point, shows *red* between the bearings of S. 28° E. and S. 47° E.; and *white* from the bearing of S. 47° E., to the north bank of the river.

218.—NORTH SEA.—*Netherlands.*—*Maas River Entrance.*—*Hook of Holland Canal.*—*Alteration in Position of Leading Lights.* The two fixed *white* leading lights have been moved westward of

their former positions; the upper light now bears S. by E. $\frac{1}{2}$ E. distant 842 yards from the lower light. The low light is now exhibited from the signal staff upon the south mole. The high light is now shown at an elevation of 89 feet above high water, from a position near the coast, southward of the south mole. Position of high light, lat. $51^{\circ} 58' 12''$ N., long. $4^{\circ} 5' 54''$ E.

Note.—These lights in line bearing S. by E. $\frac{1}{2}$ E., lead in the deepest water ($10\frac{1}{2}$ feet at low water ordinary springs) across the narrowest part of the channel at the entrance to the Hook of Holland canal, and 109 yards west of the northern mole head, until the red lights at Krimsloot are in line.

219.—NORTH SEA.—*Netherlands.*—*Maas River.*—*Bokke Gat.*—*Alteration in Position of Noord Pampus Light-Vessel.*—This light-vessel is now moored on the north side of the channel, near the junction of Bokke and Noorder gats, at the eastern extreme of Ribben sand, in 4 fathoms at low water, with the following bearings, viz.:—Brielle church, E. $\frac{1}{4}$ N.; Kwak Hoek lighthouse, S.E. $\frac{1}{4}$ S.; Goeree lighthouse, W. by S. $\frac{1}{4}$ S. The light-vessel has one mast, is painted red, and shows a *fixed white* light visible 9 miles. Position, lat. $51^{\circ} 51' 45''$ N., long. $4^{\circ} 1' 15''$ E. *Variation*, 17° W.

220.—NORTH SEA.—*Jade River.*—*Light-Vessel and Fog-Signal on Genius Bank.*—A light is now exhibited from a light-vessel placed at the south-east extreme of Genius bank, Jade river. The light is *fixed white*, elevated 39 feet above the sea, and visible about 8 miles. A white riding light is also exhibited from the forestay, 6 feet above the rail. The light-vessel, painted red, and the words *Genius bank* on her sides, has one mast with black globe at mast head, and is moored in 29 feet at low water. Position, lat. $53^{\circ} 34' 45''$ N., long. $8^{\circ} 10' 40''$ E. During thick and foggy weather, a bell will be rung for the period of *two minutes* at intervals of *three minutes*.

Note.—Vessels should pass eastward of this light-vessel. Should the vessel be driven from her station, the light will not be exhibited, and in day time the globe will be lowered and a black flag shown.

221.—NORTH SEA.—*Jade River.*—*Alteration in Varelseriel*

High Light.—The following alteration has been made in the character of the upper light exhibited on Schlaf mole, northward of Varel:—The fixed red light showing in two sectors from the upper lighthouse is discontinued, and in place thereof a *flashing* light, visible 13 miles, is exhibited as follows:—In the Western sector, between the bearings S. 39° E. and S. 13° W., there is exhibited two flashes of *one second's* duration each, divided by an interval of *one second* of darkness, each pair of flashes being followed by an eclipse of *four seconds*. In the Eastern sector, between the bearings S. 16° $\frac{1}{2}$ W. and S. 69° W., there is exhibited five flashes of *one second's* duration each, divided by intervals of *one second* of darkness, each group of flashes being followed by an eclipse of *eight seconds*.

Note.—The lower light (fixed white) will remain unaltered. *Variation*, 15° W.

222.—BAL TIC.—*Gulf of Finland.*—*Barö Sound.*—*Renskär Island Light.*—This light is *temporarily discontinued*, in order to repair the apparatus, and due notice will be given of its re-exhibition.

223.—PORTUGAL.—*West Coast.*—*River Tagus.*—*Leading Lights for Lisbon Bar.*—Two red leading lights now mark the channel, entering and leaving, over the great bar of Lisbon. They are situated on the north bank of the River Tagus. The red light of Alto de Caxias is temporarily placed on a wooden house painted green, close to the Mirante de Caxias, where a stone tower is in course of construction. The light is 246 feet above the sea and visible 18 miles. The red light of Porto Covo is shown from a wooden tower, projecting above a house painted red, with a white roof. The light is 66 feet above the sea, and visible 10 miles.

Directions.—Vessels making for the south channel over the bar of Lisbon should, with Cape Roca light still in sight, bring the two red leading lights in one. Keeping on this course leads midway between the lights of San Julian and Bugio, and when Bugio light bears about S. by W. $\frac{1}{4}$ W. they are over the bar; then proceed up the river on an E. by S. course, and while still eastward of Belem castle. Lay to for the health and customs officers, and anchor where directed.

224.—NORTH ATLANTIC OCEAN.—Azores.—*St. Michael (San Miguel).*—*Ponta Delgada.*—*Light on Breakwater.*—Most probably on 1st August, 1878, a light would be exhibited from a lighthouse recently erected near the extremity of the breakwater at Ponta Delgada. The light will be a *fixed red*, elevated 47 feet above the sea, and visible 9 miles. The light-tower, 26 feet high, is situated about 200 yards within the extremity of the breakwater in progress. Position approximate, lat. $37^{\circ} 44' 0''$ N., long. $25^{\circ} 40' 85''$ W.

Note.—The soundings in an easterly direction from low water at the extremity of the breakwater, increase regularly to the depth of 12 fathoms.

225.—MEDITERRANEAN.—FRANCE.—*South Coast.*—*Toulon Outer Road.*—*Light-Vessels Near Works in Progress.*—Lights are now exhibited from light-vessels temporarily placed near the extremities of three piers in course of construction, in Toulon outer road:—

1. A light is now exhibited from a light-vessel placed near the extremity of a pier in course of construction extending from the coast eastward of Grosse Tour, and with Grosse Tour bearing N. by E., distant about $2\frac{1}{2}$ cables. It is a *fixed green* light, elevated 83 feet above the sea, and visible one mile.

Note.—This light-vessel will be shifted outward as the works progress, and be finally maintained in position at the southern extremity until the pier is completed.

Grosse Tour pier will extend 1,700 yards from the coast in a S.S.W. direction, and will be intersected at the distance of 160 yards from the shore by a pass about three-quarters of a cable in width, with a depth of $9\frac{1}{2}$ feet. This channel will be marked on each side by a beacon with black and white globe.

2. With reference to Notice 189, p. 757, on the establishment of a light-vessel near the extremity of St. Mandrier pier, the light-vessel (showing a *fixed red* light) is moored in the position of the conical black buoy, with the centre of St. Mandrier circular battery bearing about S. $\frac{1}{2}$ E., distant 2 cables. St. Mandrier pier will extend 380 yards from the shore in a N. $\frac{1}{2}$ W. direction.

3. When Vieille pier is commenced, a light will be exhibited

from a light-vessel placed near its intended extremity, with Vieille point bearing S.W. $\frac{3}{4}$ W., distant three quarters of a cable. The light will be a *fixed red* light, elevated 33 feet above the sea, and visible one mile. Vieille pier will extend 160 yards from the shore in a N.E. $\frac{1}{2}$ E. direction.

Note.—Vessels entering Toulon harbour, should keep the green light on the starboard hand; the red lights on the port hand. *Variation*, 15° W.

226.—MEDITERRANEAN.—*Bonifacio Strait.*—*Reported sunken (and unmarked) danger in Barretini Pass.*—This danger, on which the British steam-vessel *Stanford* recently struck and subsequently foundered, is reported to lie in Barretini Pass, nearly midway between Marginetto point (the north extreme of Maddalena island) and the cluster of rocks, above water, situated southward of Barretini islet. Position approximate, lat. 41° 16' 25" N., long. 9° 25' 15" E.

Caution.—Until the locality has been examined, mariners should navigate Barretini pass with caution.

227.—ADRIATIC.—*Port Malamocco.*—*Alterations in Spignone Channel Light.*—The following alterations have been made in the light exhibited on the south side of Spignone channel entrance, port Malamocco:—The light (*fixed green*) is exhibited from an iron framework in the north-east part of the building, elevated 38 feet above high water, and visible through an arc of 300°, or from the bearing of E. to that of S. 30° E., from a distance of about 7 miles.

228.—BLACK SEA.—*East Coast.*—*Regulations for the approach to Soujak Bay.*—In consequence of torpedoes being laid down in Soujak (Novorossiskoi) bay, the following regulations must be observed:—Vessels bound to Soujak bay in fine weather, must heave to off cape Penai, and wait for a pilot, who will conduct them to the anchorage. Should the state of the weather prevent a pilot boarding the vessel, a course may be shaped from cape Penai towards Miskak point, and having approached the western shore of Soujak bay, within the distance of about one mile, the town may be steered for, passing between the buoys that mark the submerged obstructions.

229.—AFRICA.—*South West Coast.—Cape of Good Hope Peninsula.—Shoal Ground off Olifants Bosh Point.*—A sunken danger having been reported 8 miles from the shore, in the neighbourhood of Olifants Bosh point, on which it was stated the Union Mail steamer *Kaffir* recently struck, on her passage between Table bay and cape of Good Hope, a close examination of this locality has been made by Commander W. J. L. Wharton, H.M. surveying vessel *Fawn*, with the following results :—No indication of sunken rocks farther from the coast than 6 cables could be found in the neighbourhood of Olifants Bosh point, which is on the west coast of the peninsula about 7 miles from the cape of Good Hope. *Albatross rock*, on which the *Kaffir* probably struck, has less than 6 feet water, with 7 to 13 fathoms around and 5 fathoms between it and Olifants Bosh point ; the rock is about 2 cables long in an E.N.E. and W.S.W. direction, with a breadth of one cable ; its outer part bears W. by S. from Olifants Bosh point, distant 6 cables. Position, lat. $34^{\circ} 16' 40''$ S., long. $18^{\circ} 22' 25''$ E. A mile westward of Albatross rock, the soundings increase to 27 and 30 fathoms, and nearly the same depths are found at the distance of $2\frac{1}{2}$ miles in the same direction. N.N.E. $\frac{1}{4}$ E. from Albatross rock, distant $1\frac{1}{2}$ mile, and nearly 4 cables from the shore, a detached rocky patch of small extent, with less than 6 feet water on it, also exists.

Caution.—Cape of Good Hope light is obscured between the bearings S.S.E. $\frac{1}{2}$ E. and S.S.E. $\frac{3}{4}$ E. These bearings lead southwest of Albatross rock, from one mile to about one-third of a mile clear of it. Variation, $80\frac{1}{4}^{\circ}$ W.

230.—AFRICA.—*South Coast.—Kowie River Entrance.—Harbour Light at Port Alfred.*—The harbour light at Port Alfred is now exhibited from near the extremity of the Western pier. It is a fixed green light visible about 6 miles.

231.—INDIA.—*Bay of Bengal—Hooghly River.—For Fog-Signals and Distinguishing Marks at Light-Vessels.*—On 1st October, 1878, fog-signals will be established at the under-mentioned light-vessels :—At Lower Gaspar light-vessel.—During thick and foggy weather a gun will be fired every half-hour (at the hour and half-hour). At Upper Gaspar light-vessel.

from a light-vessel placed near its intended extremity, with Vieille point bearing S.W. $\frac{1}{4}$ W., distant three quarters of a cable. The light will be a *fixed red light*, elevated 33 feet above the sea, and visible one mile. Vieille pier will extend 160 yards from the shore in a S.E. $\frac{1}{4}$ E. direction.

Note.—Vessels entering Toulon harbour, should keep the green light on the starboard hand; the red lights on the port hand. Variation, 15° W.

226.—**MEDITERRANEAN.**—*Bonifacio Strait.*—*Reported sunken (and unmarked) danger in Barretti Pass.*—This danger, on which the British steam-vessel *Stanford* recently struck and subsequently foundered, is reported to lie in Barretti Pass, nearly midway between Marginetto point (the north extreme of Maddalena island) and the cluster of rocks, above water, situated southward of Barretti islet. Position approximate, lat. 41° 16' 25" N., long. 9° 25' 15" E.

Caution.—Until the locality has been examined, mariners should navigate Barretti pass with caution.

227.—**ADRIATIC.**—*Port Malamocco.*—*Alterations in Spignone Channel Light.*—The following alterations have been made in the light exhibited on the south side of Spignone channel entrance, port Malamocco:—The light (*fixed green*) is exhibited from an iron framework in the north-east part of the building, elevated 88 feet above high water, and visible through an arc of 300°, or from the bearing of E. to that of S. 30° E., from a distance of about 7 miles.

228.—**BLACK SEA.**—*East Coast.*—*Regulations for the approach to Soujak Bay.*—In consequence of torpedoes being laid down in Soujak (Novorossiskoi) bay, the following regulations must be observed:—Vessels bound to Soujak bay in fine weather, must heave to off cape Penai, and wait for a pilot, who will conduct them to the anchorage. Should the state of the weather prevent a pilot boarding the vessel, a course may be shaped from cape Penai towards Miskak point, and having approached the western shore of Soujak bay, within the distance of about one mile, the town may be steered for, passing between the buoys that mark the submerged obstructions.

229.—AFRICA.—*South West Coast.—Cape of Good Hope Peninsula.—Shoal Ground off Olifants Bosh Point.*—A sunken danger having been reported 3 miles from the shore, in the neighbourhood of Olifants Bosh point, on which it was stated the Union Mail steamer *Kaffir* recently struck, on her passage between Table bay and cape of Good Hope, a close examination of this locality has been made by Commander W. J. L. Wharton, H.M. surveying vessel *Fawn*, with the following results :—No indication of sunken rocks farther from the coast than 6 cables could be found in the neighbourhood of Olifants Bosh point, which is on the west coast of the peninsula about 7 miles from the cape of Good Hope. *Albatross rock*, on which the *Kaffir* probably struck, has less than 6 feet water, with 7 to 13 fathoms around and 5 fathoms between it and Olifants Bosh point ; the rock is about 2 cables long in an E.N.E. and W.S.W. direction, with a breadth of one cable ; its outer part bears W. by S. from Olifants Bosh point, distant 6 cables. Position, lat. $34^{\circ} 16' 40''$ S., long. $18^{\circ} 22' 25''$ E. A mile westward of Albatross rock, the soundings increase to 27 and 30 fathoms, and nearly the same depths are found at the distance of $2\frac{1}{2}$ miles in the same direction. N.N.E. $\frac{1}{4}$ E. from Albatross rock, distant $1\frac{1}{2}$ mile, and nearly 4 cables from the shore, a detached rocky patch of small extent, with less than 6 feet water on it, also exists.

Caution.—Cape of Good Hope light is obscured between the bearings S.S.E. $\frac{1}{2}$ E. and S.S.E. $\frac{1}{4}$ E. These bearings lead south-west of Albatross rock, from one mile to about one-third of a mile clear of it. Variation, $30\frac{1}{4}^{\circ}$ W.

230.—AFRICA.—*South Coast.—Kowie River Entrance.—Harbour Light at Port Alfred.*—The harbour light at Port Alfred is now exhibited from near the extremity of the Western pier. It is a fixed green light visible about 6 miles.

281.—INDIA.—*Bay of Bengal—Hooghly River.—For Fog-Signals and Distinguishing Marks at Light-Vessels.*—On 1st October, 1878, fog-signals will be established at the under-mentioned light-vessels :—At Lower Gaspar light-vessel.—During thick and foggy weather a gun will be fired every half-hour (at the hour and half-hour). At Upper Gaspar light-vessel.

—During thick and foggy weather, a *gun* will be fired every *half-hour* (at the first and third quarters of the hour). Also, from 1st October, 1878, Mutlah light-vessel will carry a globe, painted *red* with *white* horizontal band, at the mast head. And Pilot Ridge light-vessel will carry a globe, painted *white* with *black* horizontal band, at the mast head.

232.—INDIA.—*Malacca Strait.—Eastern Coast.—Light at Pulo Lumaut.*—A light is now exhibited at the south-west extreme of Pulo Lumaut, entrance to Lumaut strait. It is a *fixed white* light, elevated 30 feet above high water, and visible through an arc of 75° , or between the bearings of N. by W. and N.E. by E. $\frac{3}{4}$ E., from a distance of 10 miles. The light is exhibited from the summit of a wooden framework. Position approximate, lat. $2^{\circ} 52' 50''$ N., long. $101^{\circ} 14' 20''$ E. On the exhibition of this permanent light, the temporary light (fixed red) exhibited from the same spot will be discontinued. Variation, $1\frac{3}{4}^{\circ}$ E.

233.—CHINA.—*East Coast.—Wusung River Entrance.—Alteration in Position of Wusung Outer Bar Buoy, and Alterations in Wusung Light.*—In consequence of changes in the banks at Wusung river entrance, the following alteration has been made in the position of Wusung outer bar buoy:—The buoy (*red* and *black* in vertical stripes), on the western side of Wusung river entrance, has been shifted three quarters of a cable S. by W. of its former position. Also, for the same reason, alterations have been made in the light exhibited on the west side of Wusung river entrance. The light (*fixed*) now shows *white* from the river bank north-west of the lighthouse to the bearing of S. 1° E.; *green* between the bearing S. 1° E. and S. 56° W.; *white* over the navigable channel of the entrance between S. 56° W. and S. $70\frac{1}{2}^{\circ}$ W.; and *red* between S. $70\frac{1}{2}^{\circ}$ W. and the right bank of Wusung river. Variation, $2\frac{1}{4}^{\circ}$ W.

234.—AUSTRALIA.—*South Australia.—Investigator Strait.—Intended Light on Althorpe South Island.*—Owing to unforeseen difficulties, the date of exhibition of this light has been postponed. Further notice will be given before it is exhibited.

235.—AUSTRALIA.—*South Australia.—Rivoli Bay.—Revolving Light on Penguin Island.*—On and after 1st October, 1878, a light

will be exhibited from a lighthouse recently erected on Penguin island, at the north end of Rivoli bay. It will be a *flashing white* light, showing a flash every *ten seconds*, elevated 80 feet above the sea, and visible about 12 miles. The light tower and keeper's dwelling are painted white. Position approximate, lat. $37^{\circ} 30' 35''$ S., long. $140^{\circ} 1' 15''$ E.

286.—AUSTRALIA.—*East Coast.*—*Queensland.*—*Cape Melville.*—*Light-Vessel near Channel Rock.*—A light is now exhibited from a light-vessel placed on the north side of Channel rock, north-west of cape Melville. It is a *fixed white* light, elevated 85 feet above the sea, and visible about 10 miles. The light-vessel is moored in 14 fathoms water, with the following bearings, viz. :—Pipon islets beacon, E. $\frac{3}{4}$ N. ; Channel rock, S. $\frac{1}{4}$ W. Position, lat. $14^{\circ} 7' 40''$ S., long. $144^{\circ} 31' 30''$ E.

Note.—Vessels rounding cape Melville should pass northward of this light-vessel. *Variation*, $5\frac{1}{4}^{\circ}$ E.

287.—NEW ZEALAND.—*Middle Island.*—*East Coast.*—*Light at Timaru.*—A light is now exhibited from a lighthouse recently erected at Timaru, on the east coast of Middle island. It is a *fixed white* light, elevated about 85 feet above the sea, and visible between the bearings of N. 20° W. through W. to S. 20° E., from a distance of about 14 miles. The lighthouse, 80 feet high, is built of wood and painted stone colour. Position, lat. $44^{\circ} 23' 30''$ S., long. $171^{\circ} 18' 35''$ E. On the exhibition of this light the *fixed red* light, formerly shown from the harbour master's office at Timaru, would be discontinued. *Variation*, $16\frac{1}{2}^{\circ}$ E.

288.—NORTH AMERICA.—*West Coast.*—*Mexico.*—*Port Acapulco.*—*Discontinuance of Grifo Point Light.*—The light on Grifo point, port Acapulco, is discontinued.

289.—UNITED STATES.—*Pacific Coast.*—*Oregon.*—*Humboldt Bay.*—*Buoy with Self-acting Whistle.*—An automatic (or self-acting) signal buoy has been placed off Humboldt bar. The buoy, painted *black* and *white* in vertical stripes, and giving blasts of a whistle at short intervals, is moored in 15 fathoms at low water, with the following bearings, viz. :—Humboldt light-house, E. $\frac{1}{4}$ N. ; Red bluff, S.E. by E. $\frac{3}{4}$ E. *Variation*, $18\frac{1}{2}^{\circ}$ E.

OUR OFFICIAL LOG.

GENERAL RULES FOR FORMAL INVESTIGATIONS INTO SHIPPING CASUALTIES, 1878.

Whereas by the Merchant Shipping Act, 1876, it is provided that the Lord High Chancellor of Great Britain may from time to time make, and when made revoke, alter, and add to, general rules for carrying into effect the enactments relating to formal investigations into shipping casualties: Now, therefore, I, the Right Honourable Hugh MacCalmont Baron Cairns, Lord High Chancellor of Great Britain, do order as follows:—

Short Title.—1. These Rules may be cited as “The Shipping Casualties Rules, 1878.”

Commencement.—2. These Rules shall come into operation on the 1st day of October, 1878.

Interpretation.—3. In construction of these Rules the word “Judge” shall mean the Wreck Commissioner, Stipendiary Magistrate, Justices, or other authority empowered to hold a formal investigation into a shipping casualty.

Publication of Rules.—4. These Rules shall be published by Her Majesty’s Stationery Office through its agents, and a copy shall be kept at every Custom House and Mercantile Marine Office in the United Kingdom, and any person desiring to peruse them there shall be entitled to do so.

Notice of Investigation.—5. When a formal investigation into a shipping casualty has been ordered, the Board of Trade may cause a notice, to be called a Notice of Investigation, to be served upon the owner, master, and officers of the ship, as well as upon any person who may appear to have in any way contributed to the casualty. Form of the Notice of Investigation will be found in the Appendix No. 1.

Parties.—6. The Board of Trade, and any certificated officer upon whom a Notice of Investigation has been served, shall be deemed to be parties to the proceedings.

7. Any other person upon whom a Notice of Investigation has been served, and any person who shows that he has an interest in the investigation, shall have a right to appear, and shall thereupon become a party to the proceedings.

8. Any other person may, by permission of the Judge, appear, and shall thereupon become a party to the proceedings.

Notice to Produce.—9. A party may give to any other party notice in writing to produce any documents (saving all just exceptions) relating to the matters in difference between them, and which are in the possession or under the control of such other party; and if the notice is not complied with, secondary evidence of the contents of the documents may be given by the party who gave the notice.

Notice to Admit.—10. A party may give to any other party notice in writing to admit any documents (saving all just exceptions); and in case of neglect or refusal to admit after such notice, the party so neglecting or refusing shall be liable for all the costs of proving the documents, whatever may be the result, unless the Court is of opinion that the refusal to admit was reasonable; and no costs of proving any document shall be allowed unless such notice be given, except where the omission to give the notice has, in the opinion of the officer by whom the costs are taxed, been a saving of expense.

Witnesses.—11. The Wreck Commissioner may issue subpoenas for the attendance of witnesses either before himself or before any other Judge, and such subpoenas shall be as nearly as possible in the form used in the High Court of Justice, and may be served and shall have effect in any part of the United Kingdom.

Affidavits.—12. Affidavits may, by permission of the Judge, be used as evidence at the hearing, when sworn to in any of the following ways—viz. :

In the United Kingdom, before the Judge, or before a person authorised to administer oaths in the Supreme Court of Judicature, or before a Stipendiary Magistrate, or before a Justice of the Peace for the county or place where it is sworn or made.

In any place in the British dominions out of the United Kingdom, before any Court, Judge, or Justice of the Peace, or any person authorised to administer oaths in any Court in that place.

In any place out of the British dominions, before a British

Minister, Consul, Vice-Consul, or Notary Public, or before a Judge or Magistrate, whose signature is authenticated by the official seal of the Court to which such Judge or Magistrate is attached.

Proceedings in Court.—13. At the time and place appointed for holding the investigation, the Court may proceed to hear and adjudicate upon the case, whether the parties, upon whom a Notice of Investigation has been served, or any of them, are present or not.

14. The Board of Trade shall first produce any witnesses whom they may wish to examine, and who can give material evidence in regard to the casualty, whether they were or were not on board the ship at the time.

15. The witnesses shall be cross-examined by the parties in such order as the Judge may direct, and may be re-examined by the Board of Trade.

16. On the completion of their examination, the Board of Trade shall state in open Court upon what questions in reference to the causes of the casualty, and the conduct of any persons connected therewith, they desire the opinion of the Court; and if any person whose conduct is in question is a certificated officer, they shall also state in open Court whether in their opinion his certificate should be dealt with.

17. The Board of Trade and any other party may thereupon produce further witnesses, who shall be examined, cross-examined, and re-examined in such order as the Judge may direct.

18. When the whole of the evidence is concluded, the parties shall be heard in such order as the Judge may direct, and the Board of Trade shall be heard in reply.

19. The Judge may adjourn the Court from time to time and from place to place, as he may think fit.

20. Except when the certificate of an officer is cancelled or suspended, in which case the decision shall always be given in open Court, the Judge may deliver the decision of the Court either *rità voce* or in writing; and, if in writing, it may be sent or delivered to the respective parties, and it shall not be necessary to hold a Court merely for the purpose of giving the decision.

21. The Judge may, if he thinks fit, order the costs and expenses of the proceedings, or any part thereof, to be paid by either the Board of Trade, or by any other party to the proceedings. Form of Order for payment of costs will be found in the Appendix No. 2.

22. At the conclusion of the case the Judge shall report to the Board of Trade. Form of the Report will be found in the Appendix No. 8.

Computation of Time.—23. In computing the number of days within which any act is to be done, they shall be reckoned exclusive of the first day and inclusive of the last day, unless the last day shall happen to fall on a Sunday, Christmas Day, or Good Friday, or on a day appointed for a public fast or thanksgiving, in which case the time shall be reckoned exclusive of that day also.

Service of Notices, &c.—24. Any notice, summons, or other document issuing out of the Court may be served by post.

25. The service of any notice, summons, or other document may be proved by the oath or affidavit of the person by whom it was served.

Repealing Clause.—26. The Shipping Casualties Rules, 1876, except as to the cases in which an Order for a Formal Investigation shall have been made previous to the 1st day of October, 1878, are hereby revoked.

Dated this 20th day of July, 1878.

CAIRNS, C.

APPENDIX.

The following forms shall be used, as far as possible, with such alterations as circumstances may require, but no deviation from the prescribed forms shall invalidate the proceedings, unless the Judge shall be of opinion that the deviation was material.

No. 1.—Notice of Investigation.

To Master, Mate, Engineer, Owner, &c., of or
belonging to the ship of .

I hereby give you notice that the Board of Trade have ordered a formal investigation to be held into the circumstances attending the _____

and that subjoined hereto is a copy of the report [or statement of the case], upon which the said investigation has been ordered. I further give you notice to produce to the Court [your Board of Trade Certificate, the Log Books of the vessel, and] any [other] documents relevant to this case which may be in your possession. Dated this day of 18 . _____ Solicitor, Board of Trade.

No. 2.—Order on a party for Payment of Costs of Investigation.

In the matter of a formal investigation held at on the
(here state all the days on which the Court sat) days of before
assisted by into the circumstances attending
the _____

The Court, orders—

(1) that *A.B.* of do pay to the Solicitor to the Board
of Trade [the sum of pounds on account of] the expenses
of this investigation.

or (2) that the Board of Trade do pay to *A.B.* of
[the sum of pounds on account of] the expenses of this
investigation.

Given under my hand this day of 18 . _____ Judge.

No. 8.—Report of Court.

In the matter of a formal investigation held at on the
(here state all the days on which the Court sat) days of
before assisted by into the circumstances
attending the _____

The Court, having carefully inquired into the circumstances
attending the above-mentioned shipping casualty, finds, for the
reasons stated in the Annex hereto, that the (here state finding of
the Court).

Dated this day of 18 . _____ Judge.

We [or I] concur in the above report, _____ Assessor.

_____ Assessor.

Annex to the Report.

(Here state fully the circumstances of the case, the opinion of the
Court touching the causes of the casualty, and the conduct of any

persons implicated therein, and whether the certificate of any officer is to be either suspended or cancelled, and if so for what reasons.)

OFFICIAL INQUIRIES AT HOME, 1868.

(This List is completed to the 18th of each Month.)

Caduceus, iron; owned by Mr. John Hall and others, of Newcastle; tonnage, 1,179; explosion on board whilst loading a cargo of coals at Cardiff. Inquiry held before Rothery, Wreck Commissioner, June 28, 1878. Doubt as to the Commissioner's jurisdiction, and he therefore only stated his conclusions from the evidence adduced, viz., that no arrangements for proper ventilation were made, that the explosion was due to one of the trimmers taking a light into the forehold, and that the owners' superintendent exhibited marked ignorance on the subject of the character of the dangerous gases generated.

293. *Garonne*, s.s.; iron; Liverpool; owned by Mr. Jas. Anderson and others, of London; tonnage, 2,464; Adelaide to London; general cargo and passengers; stranded in the South Bay of Ras Hafun, East Coast of Africa, June 6, 1878. Inquiry held at Westminster, July 12, 1878, before Rothery, Wreck Commissioner; Aplin and Beasley, N.A. The Court found the master in default for having laid his vessel on a course which carried him too far to the westward of Ras Hafun, and for having proceeded at full speed after he had seen land, without ascertaining what land it was. Certificate suspended for six months, and recommended for one as chief officer during that period.

294. *Westborough*, wood; built at Pallion, 1878; owned by Mr. B. Fowler, and others, Scarborough; tonnage, 324; stranded on a rock to the eastward of Storgrund, Gulf of Bothnia, June 29, 1878. Inquiry held at Middlesborough, July 26, 1878, before Coleman, Stip. Mag. Grant and Curling, N.A. Master not entirely free from blame. Reprimanded and cautioned to be more careful in future.

OFFICIAL INQUIRIES ABROAD.

Countess, brig; stranded and lost on the south side of Fortune Island. Inquiry held at South Cay, March 9, 1878. No one to blame.

Nelson, s.s.; stranded near Cape Otway, April 18, 1878. Inquiry held at Victoria, April 25, 1878. Master to blame for running too close to the reef. Certificate suspended for 3 months.

Haining, s.s.; lost on the 25 foot Rock, Mian Jan Straits, Gulf of Pechili, April 13, 1878. Naval Court held at Shanghai, April 25, 1878. Master in default for running at full speed in a fog. Certificate suspended for six months.

Violet, ketch; stranded at Brisbane. Inquiry held at Sydney, May 13, 1878. Master exonerated from blame.

China, s.s.; took fire in Bombay Harbour, and was towed on to the Sewree Mud Flat, Mazagon, and there partially submerged, May 18, 1878. Inquiry held at Bombay, June 7, 1878. Master entirely exonerated from blame, and the Court recorded their sense of the great energy and fertility of resource displayed by him.

Trinculo, barque, and *Goolwa*, s.s.; in collision off Newcastle, N.S.W., February 17, 1878. Inquiry held at Newcastle, June 13, 1878. Master of the tug did not observe sufficient caution; master of the barque free from blame.

Magnolia, wood; lost on the Coast of Cochin China, June 1, 1878. Inquiry held at Saigon, June 8, 1878. The Court held that the master displayed great want of judgment in steering the courses which he did, and suspended his certificate for six months; recommended for one as mate during that time.

Craigie Lea, wood; met with an accident off the Crozet Islands. Inquiry held at Freemantle, June 11, 1878. No one to blame.

Tasmanian, s.s.; stranded off Ponce, Porto Rico, May 27, 1878. Naval Court held at Ponce, June 20, 1878. Master to blame for trusting too much to his local knowledge.

Lion, s.s.; lost off the Albrohos, May 18, 1878. Inquiry held at Bahia, June 21, 1878. Master guilty of negligent navigation in not using the lead frequently. Certificate suspended for six months.

Thomas Brocklebank, wood; lost on the Rosario Reef, Jamaica. Inquiry held at Havana, June 26, 1878. No blame attached to master or crew.

Stamford, s.s.; stranded on a sunken rock near the Straits of Bonifacio, and subsequently foundered, June 30, 1878. Inquiry held at Genoa, July 6, 1878. Master exonerated from blame.

Crimdon, s.s.; stranded near Besika Point. Naval Court held on board *H.M.S. Research*, July 12, 1878. Master acquitted of all blame.

Khedive, s.s., and *Voorwaats*, s.s.; in collision off Muka Head, Island of Penang. Inquiry held at Penang. Master and officers of *Khedive* exonerated from blame.

John Middleton, s.s., *Medjume Chefket*, ironclad, and *H.M.S. Antelope*; in collision at Constantinople. Naval Court held at Constantinople. Casualty due to a foul berth given to the *John Middleton* by the pilot. Master and officers free from blame.

GENERAL.

BILLS OF LADING.—PORT OF NATAL.

The following is the draft of a measure which has recently been introduced into the Legislature of Natal, having for its object "to amend in certain respects the law as to goods conveyed by sea":—

Whereas, it is expedient to amend, in certain particulars, the law whereby consignees of goods are prevented by the terms of Bills of Lading from recovering compensation from shipowners for loss or damage happening to goods referred to in such Bills:—Be it therefore enacted by the Lieutenant-Governor of the Colony of Natal, with the advice and consent of the Legislative Council thereof, as follows:—

1. In an action brought in this Colony nothing contained in any Bill of Lading shall exempt the shipowner in respect of goods shipped on any ship of his from liability in respect of loss of, or damage to, such goods, or any part thereof, unless such loss or damage shall have occurred without negligence or other default of, or in any person employed on behalf of, the shipowner on board the ship having materially contributed to such loss or damage: Provided always, that loss or damage to goods before delivery or receipt to, by, or on behalf of, the consignee, shall be *prima facie* evidence of there having been such negligence or default, and of its having materially contributed as aforesaid.

Nelson, s.s.; stranded near Cape Otway, April 18, 1878. Inquiry held at Victoria, April 25, 1878. Master to blame for running too close to the reef. Certificate suspended for 3 months.

Haining, s.s.; lost on the 25 foot Rock, Mian Jan Straits, Gulf of Pechili, April 18, 1878. Naval Court held at Shanghai, April 25, 1878. Master in default for running at full speed in a fog. Certificate suspended for six months.

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China, s.s.; took fire in Bombay Harbour, and was towed on to the Sewree Mud Flat, Mazagon, and there partially submerged, May 18, 1878. Inquiry held at Bombay, June 7, 1878. Master entirely exonerated from blame, and the Court recorded their sense of the great energy and fertility of resource displayed by him.

Trinculo, barque, and *Goolwa*, s.s.; in collision off Newcastle, N.S.W., February 17, 1878. Inquiry held at Newcastle, June 18, 1878. Master of the tug did not observe sufficient caution; master of the barque free from blame.

Magnolia, wood; lost on the Coast of Cochin China, June 1, 1878. Inquiry held at Saigon, June 8, 1878. The Court held that the master displayed great want of judgment in steering the courses which he did, and suspended his certificate for six months; recommended for one as mate during that time.

Craigie Lea, wood; met with an accident off the Crozet Islands. Inquiry held at Freemantle, June 11, 1878. No one to blame.

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Lion, s.s.; lost off the Albrohos, May 18, 1878. Inquiry held at Bahia, June 21, 1878. Master guilty of negligent navigation in not using the lead frequently. Certificate suspended for six months.

Thomas Brocklebank, wood; lost on the Rosario Reef, Jamaica. Inquiry held at Havana, June 26, 1878. No blame attached to master or crew.

Stamford, s.s.; stranded on a sunken rock near the Straits of Bonifacio, and subsequently foundered, June 30, 1878. Inquiry held at Genoa, July 6, 1878. Master exonerated from blame.

Crimdon, s.s.; stranded near Besika Point. Naval Court held on board *H.M.S. Research*, July 12, 1878. Master acquitted of all blame.

Khedive, s.s., and *Voorwaats*, s.s.; in collision off Muka Head, Island of Penang. Inquiry held at Penang. Master and officers of *Khedive* exonerated from blame.

John Middleton, s.s., *Medjums Chefket*, ironclad, and *H.M.S. Antelope*; in collision at Constantinople. Naval Court held at Constantinople. Casualty due to a foul berth given to the *John Middleton* by the pilot. Master and officers free from blame.

GENERAL.

BILLS OF LADING.—PORT OF NATAL.

The following is the draft of a measure which has recently been introduced into the Legislature of Natal, having for its object "to amend in certain respects the law as to goods conveyed by sea":—

Whereas, it is expedient to amend, in certain particulars, the law whereby consignees of goods are prevented by the terms of Bills of Lading from recovering compensation from shipowners for loss or damage happening to goods referred to in such Bills:—Be it therefore enacted by the Lieutenant-Governor of the Colony of Natal, with the advice and consent of the Legislative Council thereof, as follows:—

1. In an action brought in this Colony nothing contained in any Bill of Lading shall exempt the shipowner in respect of goods shipped on any ship of his from liability in respect of loss of, or damage to, such goods, or any part thereof, unless such loss or damage shall have occurred without negligence or other default of, or in any person employed on behalf of, the shipowner on board the ship having materially contributed to such loss or damage: Provided always, that loss or damage to goods before delivery or receipt to, by, or on behalf of, the consignee, shall be *prima facie* evidence of there having been such negligence or default, and of its having materially contributed as aforesaid.

2. The shipper, or other consignor, or the consignee, may, by any writing distinct from the Bill of Lading, and as nearly as may be in form as in the schedule hereto, and signed by or on behalf of such shipper, consignor, or consignee, agree to exempt any Bill of Lading in whole or in part from the provisions of this law. And such agreement shall avail as between the shipowner and the person by or on whose behalf there shall be such signature.

3. Nothing in this law contained shall confer any greater exemption on any shipowner than he would have had if this law had not been passed.

4. Nothing in this law shall affect the right of any person to recover under or require cession of or authority to sue on any policy of insurance or in respect thereof.

5. The term "shipowner," as used in this law, shall be deemed to include any charterer or any other person by or on whose behalf Bills of lading may be signed for the purpose of contracting to convey or of acknowledging receipt of goods in or on board ship. And the term "Bill of Lading" shall include any passenger's ticket for conveyance by sea of the passenger whether or not expressed to be with luggage.

6. The law may be referred to as the Natal Bills of Lading Law, 1878, and it shall be in operation from and after the 31st day of December in this year 1878.

SCHEDULE.

I hereby agree that the provisions of the Natal Bills of Lading Law, 1878, shall not [or shall not as far as relates to fire or, as the case may be] apply to the undermentioned Bills of Lading for conveyance of goods per ship _____ that is to say:—

Bill of Lading, dated _____ Bill of Lading, dated _____
Dated this _____ (Signature) _____

Legislative Council Office, Natal, June 20, 1878.

THE
NAUTICAL MAGAZINE.

FORTY-SEVENTH YEAR.

VOLUME XLVII.—No. X.

OCTOBER, 1878.

THE PROTECTORATE OF THE SUEZ CANAL.

THE original idea of making a ship-canal through the isthmus of Suez, which should connect the Mediterranean Sea directly with the waters of the Red Sea, was first suggested in 1836 to Mohammed Ali, the first Viceroy of Egypt, by M. Lambert and another eminent French engineer, who having been comrades in the École Polytechnique at Paris, and finding themselves at last without any satisfactory career in France, determined to seek a wider field for their talents in Egypt. They had no difficulty in obtaining a favourable audience from Mohammed Ali, the enlightened ruler of Egypt, and in submitting to his approval a project for connecting the navigation of the two seas by a ship-canal.

Mohammed Ali welcomed readily their proposal; but as their project involved a total change in the course of trade between the maritime states of Europe and their Eastern dependencies, he thought it prudent to take the advice of an European power, which had not any immediate commercial interest in the question, and he sought the counsel of the late Prince Metternich, at that time Minister of Foreign Affairs for the Austrian Empire. The Prince at

once suggested some doubts as to the practicability of the scheme, and counselled the Viceroy to have the plans carefully examined, intimating that, if the scheme were found to be practicable, he would readily give the Viceroy his advice. In 1838 the design was pronounced by competent scientific authorities to be practicable, and the plans were submitted to the Prince, who advised the Viceroy to allow the works to be undertaken, but at the same time counselled him to obtain, as a preliminary step, an European treaty for the neutralisation of the canal, when completed.

Mohammed Ali did not live to see the project, which he had approved, carried into execution. In fact, the original design of the French engineers was ultimately abandoned, and it remained for M. Ferdinand de Lesseps to prepare another scheme, which was successfully commenced under the auspices of Mohammed Said, the third Viceroy of Egypt. It was not, however, permitted to Mohammed Said to witness the completion of the great work. He died in 1863, and was succeeded by his nephew Ismail, a grandson of Mohammed Ali, who was advanced to the higher dignity of Khedive of Egypt in 1867, and is at present the ruler of that country.

The canal has meanwhile been executed by a commercial company, entitled "La Compagnie Universelle du Canal Maritime de Suez." This association was founded by and is under the direction of M. Ferdinand de Lesseps, who obtained for the association in 1854 a concession of the necessary land for a period of ninety-nine years from Mohammed Said. This concession has been confirmed by a firman from his Imperial Majesty the Sultan of Turkey. The same firman of the Sultan has confirmed other concessions of the Viceroy, and likewise a solemn declaration on the part of the Viceroy, that the canal and its ports shall be always open, as neutral passages, for all merchant ships on payment of dues.

The canal has thus been the creation of a commercial society, which has its corporate seat at Alexandria and its administrative domicile at Paris. The society is governed by a managing committee consisting of the President and four members of the council. The latter body is composed of thirty-two members, representing the principal nations interested in the undertaking. There is an

annual general meeting of the shareholders, whose approval is required for certain more important matters of finance ; otherwise the committee is clothed with full powers for the conduct of the affairs of the society. The original capital of the society was fixed at 200 millions of francs, represented by 400,000 shares of 500 francs each. The shares are to bearer, and the transfer of them is effected by mere delivery of the share certificate. The civilised world is thus indebted to a private association for the opening of a new waterway between Europe and the East, which has brought about an approximation between Europe and the great nations of China and Japan, the beneficial effects of which are already apparent in the growth of international friendship, where there was formerly distrust, and in the establishment of peaceful commerce upon an intelligent appreciation of mutual interest.

Too much praise cannot be awarded to M. Ferdinand de Lesseps for his energy and perseverance in conducting the colossal scheme of the maritime canal to a successful issue ; but the means of private shareholders would have proved insufficient for the task, had not the Viceroy Mohammed Said become a subscriber for 172,642 shares. It is not necessary to enter further into the financial details of the undertaking. The shares of the Viceroy Mohammed Said have been inherited by his nephew Ismail, the present Khedive of Egypt ; and it having become necessary for the Khedive to realise funds by the sale of his shares, they were purchased by the British Government in the autumn of 1875. It appears further that shares to the value of 110 millions of francs are held by French proprietors, and the balance is dispersed amongst individual proprietors of various nationalities. Great Britain has thus by a strange caprice of fortune become financially interested in the success of an undertaking, which her Government discountenanced when it was projected, but which it has had the wisdom to accept as *un fait accompli*, and the welfare of which it may be expected to promote with the same zeal for the interests of Europe and of mankind, as the Khedive has already evinced. Necessity has in fact helped to solve the problem, how this great maritime highway is to be kept open at all times to the commerce

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of the civilised world. There is no power so much interested in securing that result as Great Britain by reason of her Eastern possessions. She did not seek to divert the course of oceanic trade from the route, which the enterprise of Vasco di Gama had disclosed to Europe by doubling the Cape of Good Hope in 1497. The substitution of a new route by the canalisation of the isthmus which connects Asia with Africa has not been of her seeking, but her shipowners have taken advantage of it, and the dues which are levied on British ships form by far the most considerable portion of the revenue of the shareholders.

A Report was presented to the Parliament of Great Britain in 1877, drawn up by Consul Percival upon the trade and commerce of Port Said. This Report exhibits a tonnage of 2,095,870 tons net register of vessels under various flags, including ships of war, transports, merchant vessels and pleasure yachts, which availed themselves of the Suez Canal as a highway between the East and West during the year 1876, and of which 75 per cent. were under the British flag. The Bulletin of the Company published on the 2nd April, 1878, furnishes a similar result, showing that the commerce of Great Britain is the great source of support to the revenues of the canal, inasmuch as of 142 vessels, which passed through the canal in the month of February, 1878, 112 vessels were under the British flag. It was natural that during the late war between Russia and the Ottoman Porte great anxiety should have arisen amongst the shareholders of the canal as to the possible interruption of its navigation, and even as to the possible destruction of some portion of its works by the operations of the war. The British Government lost no time in communicating to the Russian Government its view as to the necessity of keeping open, uninjured and uninterrupted, the communication between Europe and the East by the Suez Canal. "Any attempt," it said, "to blockade or otherwise to interfere with the canal or its approaches would be regarded as a menace to India and as a grave injury to the commerce of the world. On both of these grounds any such steps, which the British Government hoped and fully believed there was no intention on the part of either belligerent to take, would be inconsistent with the maintenance by the British

Government of an attitude of passive neutrality." In reply to this representation on the part of the British Government, Prince Gortchakow authorised Count Schouvaloff to communicate to the Earl of Derby a despatch, which bears date, St. Petersburg, 18/30 May, 1877, stating that "the Imperial Cabinet will neither blockade, nor interrupt, nor in any way menace, the navigation of the Suez Canal. They consider the canal an international work, in which the commerce of the world is interested, and which should be kept free from any attack."

Such a declaration on the part of a great belligerent Power, engaged in actual hostilities against the Ottoman Porte, the sovereign of the territory intersected by the canal, must commend itself to the thoughtful attention of statesmen as the true solution of a novel question, to which the construction of the Suez Canal has given rise. It is obvious that the Ottoman Porte itself, if it be engaged in war, would suffer no great, if any, loss from the blockade or other belligerent obstruction of the navigation of the canal, whilst the interests of neutral nations would be gravely compromised, whether we regard the interests of their subjects who are proprietors of the works of the canal, or the interests of their merchants whose commerce is dependent on the freedom of its navigation. The declaration of Great Britain, of which the terms have been already cited, is conclusive, that the new maritime highway between Europe and Asia can never be allowed, at least, by that Power, to be closed against the commerce of neutrals under any pretext of belligerent right. Further, the Suez Canal is of no commercial advantage to any port within the Egyptian territory. It is an artificial waterway which connects the navigation of two seas on opposite sides of that territory, which are open to the commerce of all nations, and have been united by a cosmopolitical enterprise, of which the gains and the losses are partitioned equally amongst the shareholders of "the Universal Company of the Maritime Canal," which has been constituted without any regard to nationality. To sustain so great a work in the interest of mankind against the operation of the destructive forces of nature, is a task sufficiently heavy for the resources of a private company; to protect it against the exercise of the

destructive powers of man under the pretext of belligerent right is a task, which merits the concerted action of the nations of both hemispheres, stipulating for its inviolability in the general interests of all mankind.

There can be no dispute that it is for the benefit of all nations, that the great stream of traffic between Europe and Asia, which has taken the course of the Suez Canal, shall not be liable to interruption by any artificial circumstance, which the wisdom of man can control, and which it is possible to provide against by a common understanding and concert amongst nations. The great Austrian statesman already referred to had full confidence in the efficacy of an European Treaty for that object. Nevertheless, as the operation of a Treaty, the purport of which would be to restrict the exercise of a primary right of war, might be somewhat precarious, inasmuch as it is an admitted principle of the Public Law of Europe, that the operation of Treaties, which are of a beneficial character, is suspended, if not put an end to, by the occurrence of war between the contracting parties ; it would be advisable, in order to obviate any technical difficulty on that head, that in the place of a Treaty, a Declaratory Act should be concerted after the examples of the Declaration of Paris of 1856, regulating the exercise of belligerent right on the high seas, and of the Declaration of St. Petersburg of 1868, interdicting the use of explosive bullets in time of war. There is, however, on record, a precedent of an International Convention for a similar object, in which the New World has set a leading example to the Old World, and the Treaty of Washington of 19th April, 1850, familiarly known as the Clayton-Bulwer Treaty, embodies a principle, which is equally applicable to the Canal of Suez as to the inter-oceanic waterway proposed at that time to be carried across the Isthmus of Panama. The Convention of 1850, at the time when it was drawn up, contemplated the immediate establishment of a communication by ship canal between the Atlantic and the Pacific Oceans, by way of the River San Juan de Nicaragua, and either or both of the Lakes of Nicaragua and Managua, to any port or place on the Pacific Ocean. The Convention itself has remained practically a dead letter, as the particular enterprise which it was intended to promote and to

protect has never been executed ; but it has placed on record the view, which two great Maritime Powers have adopted, of their mutual duties, and of their duties towards mankind in respect of such enterprises undertaken by private capitalists in the interest of the Commerce of all Nations, that they may be properly the subjects of international guarantees, "that they shall be for ever open and free, and the capital invested in them secure." At the present moment, it is announced from the other side of the Atlantic, that the United States of Columbia have concluded a Convention with an International Company to carry a canal across the Isthmus of Panama from Aspinwall to Panama. It is obvious, therefore, that the determination of the "Status" of such international works is not merely of interest as a question of European Public Law, but as a question of the Public Law of both hemispheres, which ought in such matters to be identical ; and it is on this ground, that the provisions of the Clayton-Bulwer Treaty deserve to be studied. Under that Convention Great Britain and the United States undertook to exempt the navigation of the canal, then in contemplation, from all belligerent interruption on their own part, in case they should be at war with each other, and to protect it against all interruption on the part of any other belligerent power ; and they further agreed to invite all friendly States to accede to the Convention. They agreed also to extend their protection by means of Treaties to all other practicable communications across the Isthmus, which connects the Northern with the Southern Continent of America, on condition of the shareholders maintaining an equitable scale of charges, and of the navigation being always open on equal terms to the citizens and subjects of the contracting parties.

An International Act, which should establish a common Protectorate of the Suez Canal, may properly have two objects in view, namely, the security of the capital invested in the works of "The Universal Company," and the exemption of the navigation of the canal from all blockade or interruption, even when the Porte itself shall be engaged in war, provided the vessels, which seek to pass through it, are not enemies of the Porte. This latter exception against enemy vessels has been admitted into several

Treaties of a like character subsequent to the Clayton-Bulwer Treaty, for instance, into certain Treaties of Commerce and Navigation concluded between the United States on the one hand, and Great Britain on the other, with the Republics of Honduras and of Nicaragua respectively. These Treaties deserve attention as precedents. Those of the United States (11th July, 1864, and 21st June, 1867) are to be found in the "Collection of Treaties and Conventions of the United States," edition 1873. Those of Great Britain (27th August, 1856, and 11th February, 1860) are to be found in Hertlet's "Collection of Treaties," and in the "Nouveau Recueil Général" of Marten's.

The International *status* of the Suez Canal and its place in the system of International Law came under the consideration of the Association for the Reform and the Codification of the Law of Nations, at its last Conference held at Frankfort on the Maine in the month of August last, when the Conference affirmed a resolution, "that it was for the interest of the commerce of the world, that the Suez Canal, and all similar international works, should be declared by an International Act to be for ever open and free, and exempt from all hostile attack in case of war." At this Conference there were present not merely distinguished jurists from Great Britain, the United States of America, and the Continent of Europe, but influential merchants and shipowners from Antwerp, Bremen, Hamburg, Amsterdam, Liverpool, London, and New York, and the Chamber of Commerce of Frankfort took part in the proceedings. On the other hand, the Institute of International Law, composed exclusively of jurists of high eminence, representatives of both hemispheres, which met in Paris in the first week of September last, affirmed a very similar proposition, viz., "that it was to the interest of all nations that the navigation of the Suez Canal should be declared by a general International Act to be exempt from any hostile attack in case of war." As the details however of such an International Act would require careful study, the Institute appointed a Committee to prepare a further report on the subject for its next Session.

The navigation of the Suez Canal has been already the subject of an International Act, which was concluded by the Commissioners

of twelve European Powers assembled at Constantinople in 1873, at the invitation of the Sultan, and it is under this International Act that the conditions of transit through the canal in time of peace are now regulated. Under these conditions, it appears, from one of the last annual returns of the traffic of the canal, that not only the merchants of Europe and of the remote East have profited by the opening of the canal, but the Governments of almost every European nation have taken advantage of the shorter course of communication with their dependencies in the East, which the canal has placed at their disposal. The return above mentioned shows that out of a total number of 1,457 vessels which passed through the canal, there were 315 vessels engaged in the postal service, and more than 100 vessels engaged in the military service of the States under whose flag they were navigated, and that out of a total list of 69,614 passengers there were not fewer than 40,420 engaged in the military service of their respective States, amongst which were reckoned 20,469 English, 5,991 Dutch, 5,876 French, 4,763 Ottomans, 2,921 Spanish, and 400 Portuguese. The absence of Italian vessels is noteworthy, but Italian commerce with the East has long been accustomed to be carried on through the Canal of Constantinople and the ports of the Black Sea. The present year has been signalised by a remarkable fact, namely, the passage through the Suez Canal of the steam war-corvette, the *Seiki*, under the Japanese flag, which has been constructed by Japanese shipwrights, in a Japanese port, and is manned by a Japanese captain and crew. It is not too much to say that the arrival of this vessel in the river Thames, in the month of June last, marks an epoch in the history of the civilisation of the human race, and that the Suez Canal has brought China and Japan within such easy distances from Europe, that their admission into the concert of European Public Law involves only a question of reasonable time, of which the measure may be expected to be shorter in the case of the Island State than of the great Continental Power.

TRAVERS TWISS.

WATCHING A PRIVATEER.

BY AN EX-OFFICER, U.S.N.

THOUGH in the title of this narration I make use of the word "privateer," I do so being not unaware of its failure in strict propriety. A privateer—without inflicting upon the reader the definition of the term given by learned civilians—may be shortly described as an armed ship belonging to private individuals, empowered, during war, by the Government, to carry on minor warlike operations, such as capturing the merchant vessels of an enemy, for the profit of the crew and owners, and, naturally, for only the indirect advantage of the national authority conducting the contest. In the British newspapers much has been said of late concerning some steamers which the Russian Government is believed to have purchased from foreigners with a view to their employment, should occasion demand, against the commerce of Great Britain, and I observe that these vessels have frequently been spoken of as privateers. The mere fact of their purchase by the Government would of itself show that they could not well be *private* property of unofficial owners. They are in reality as much national ships as your *Warrior* or *Neptune*, vessels built by private individuals and paid for with Government money. However, the term is so commonly accepted as the right one, and was so generally applied to the *Alabama* and others during our war of the rebellion, that convenience suggests or enjoins its use just now.

I had formerly been in the United States' Navy and had risen to the rank of master, a grade intermediate between that of ensign, or, as you call it, sub-lieutenant, and that of lieutenant, and one not known in your service. Having been, like many other naval officers of every nationality, dissatisfied with the treatment which my services—especially during the Mexican war and the Vera Cruz campaign—had met with at the hands of the Naval Department, I resigned my post in the service, and took advantage of the connection of my family with shipping to get employment in the

Mercantile Marine. When the rebellion broke out the Department applied for volunteers from the merchant service to supplement the officers of the United States' Navy, whose numbers were much too small for the force as expanded, and who had been considerably reduced by the resignation of a large body of all ranks belonging to the South. At the North, the enthusiasm (at the time I had just arrived from a long voyage to Australia and elsewhere), was at its height, and I caught it like many others. It was soon intimated to me that my previous service in, and "honourable discharge" from, the National Navy, would give me a claim for a creditable appointment amongst the volunteer officers who were coming forward in considerable numbers. So I offered my services, was given the rank of lieutenant commander, and placed in command of the purchased steamship *Plymouth Rock*.

I need not detail all that occurred after I received the official nomination to my grade and the appointment to my new command until the new steamer was fitted out, manned, taken to sea, and conducted to her station; but I may pass on at once to the period to which the story that I am about to relate especially refers. The arrangements of the United States' Naval Department for putting an end to the depredations of such vessels as the *Alabama*, &c., were not particularly fortunate in result, and were anything but judicious in design. My instructions were to look after certain rebel vessels—always, I may observe, officially styled "privateers"—and capture them if possible, or at all events prevent their doing more mischief. I was to get such information myself concerning their movements as I could, but my superiors would keep me informed of them themselves as far as possible. To receive intelligence from head-quarters, therefore, I was directed to make my appearance at certain specified places at certain times. Either these places and times were known to too many people at home, or the secret was badly kept, as the objects of my search were in full possession of them, and it perpetually happened that I arrived at some neutral port just in time to find that the rebel steamer had but shortly left, or to hear that she was known to have entered one that I had left just after I had quitted it. Occasionally we were sent off with all speed, after receiving a

telegraphic despatch from Washington, to go to some place where no privateer either was or dreamt of going to. Our Consuls were ordered to collect intelligence concerning these vessels and communicate it to the government at home and to the commanders of war vessels in their neighbourhood, and were empowered to pay for it liberally. The consequence was that they were continually being beset by ignorant or designing persons, and being told all kinds of cock-and-bull stories, which, as a rule, they believed and paid for. One officer of the rebel navy, whose health compelled him to quit active service, amused himself by going from port to port where there was a United States' Consulate purposely to give false information. He received sufficient remuneration to pay all his travelling expenses and give a handsome sum—the balance—in aid of his countrymen ruined by the war. In time our Consular agents began to perceive that they were frequently imposed upon, and a reaction set in, in consequence of which they, as a rule, disbelieved everything that was told them, at least, until they had had time to verify the information, when it was almost always too late to be of any use.

One result of this was that—though the interests of the country suffered—our cruise in the *Plymouth Rock* was rendered much more agreeable than at first it promised to be. Sudden orders and unexpected sailings became less frequent, indeed, only sufficiently so to prevent our duty becoming monotonous. Our custom was to proceed regularly to a certain number of ports in due order, to remain at each one some three or four days, during which our supply of fuel was replenished, and sea-stock and provisions laid in for the officers and men, and then continue our cruise. Our station lay chiefly amongst British Colonies, and was a very enjoyable one. We were generally believed not to be very popular with the inhabitants, and undoubtedly there was some foundation for the belief. But, on the whole, we had not much to complain of. At many places which we visited our countrymen resided in respectable numbers, and though it was very likely that the same divisions of political opinion existed among them as amongst their relatives at home, the differences were commonly kept in the background.

When it was found that Jeff. Davis's Government had no Consuls, nor ships of war to send to every part of the world, but only an occasional raiding cruiser, the American resident of "Southern proclivities" deemed it advisable to keep his opinions under control, and claim the assistance of Uncle Sam as represented by the stars and stripes, and the Consulate. We managed, therefore, occasionally, indeed generally, to see much of a very pleasant society, thanks to the introductions of our countrymen, and perhaps also (all the places we visited being commercial towns), to the fact that our expenditure during our stay was not unimportant. Both men and officers were well paid, receiving the money due to them in gold and not in greenbacks, and, in most cases, had nothing whatever to do with their dollars but spend them in the place in which they happened to be when pay-day came round.

We had been a considerable time engaged in these rather profitless duties, and were beginning to look forward to hearing something of the vessel which was to relieve us, when I received an important communication from the Department. The rebel cruiser, which had been long lurking in the waters where we were stationed, was known to have gone elsewhere, and was being closely watched by other ships of our Navy. The freedom from apprehension of her visits becoming general, a number of American shipowners and merchants determined to make an attempt to regain a footing in the great carrying trade across the Pacific and between your Australian Colonies and the Treaty ports in China and Japan. Sanguine hopes were entertained that the already threatened disappearance of the American flag from the ocean might be arrested at least in this particular quarter. If the newspapers had only kept quiet, these hopes might have been fulfilled; but not even the stirring events weekly occurring at the South, in Northern Virginia, and elsewhere, were sufficient for the "enterprising" editors of the Northern journals. Sensation headings proclaimed the *Freedom of the Seas from Rebel Privateers! American Commerce Reviving! Grand Project of our leading Shipowners, &c.!* The practice of interviewing, then in its infancy, or at least its early youth, fully exposed all that the venturesome merchants were

about to attempt. Reporters called on prominent men at their offices in the Eastern cities, and sent to press long accounts of their answers to questions put to them on the subject. It not unnaturally resulted from this that Jeff. Davis's agents, having full information, took steps to foil the project. They determined to purchase and equip a steamer at an Australian seaport, and start from thence to make raids upon the fleet of merchant vessels bearing the stars and stripes, which were expected to be soon sailing over the adjacent ocean. The ship under my command was ordered to the vicinity to frustrate this design.

No sooner had we arrived at the anchorage than I communicated with our Consul and obtained all the information concerning the steamer which he had to give me. The Consul, who had been a schoolmaster at Brundisium, Mass., was fond of long and elegantly written despatches, and it was only after the interchange of several communications in writing, during which he was enabled to display to the utmost his epistolary talent, that I succeeded in obtaining full particulars concerning the object of my search. Summarised from the Consular fine-writing, they amounted to this. The Colonial steamer *Kapunda*, built at Greenock two years before, and employed in running between the Colonial ports, had been purchased by some persons unknown, who undoubtedly were rebel agents, or as the Consul elegantly phrased it, "minions of the unhallowed insurrection which had reared its horrid front throughout the Southern section of our deeply distracted country." That she was being fitted for long sea voyages was indisputable; that she was being equipped for other than trading purposes more than likely. An exceptionally large crew had been engaged, and amongst them were several deserters from the British men-of-war on the station, who had been tempted by large offers to ship, and who were carefully kept in hiding.

The character of the vessel was shortly revealed to me in so unmistakeable a manner that any doubts as to her ultimate object which may have lingered in my mind were altogether removed. A message was brought to me one day by a friend in the city that an old brother officer, a certain Heber D. Coppin, was desirous of

renewing his acquaintance with me. Mr. Coppin, I was given to understand, had refrained from calling upon me as, at the beginning of the trouble, he had resigned his commission and had gone with his State, South Carolina, and was therefore somewhat in doubt as to the reception which he would receive, though he had taken no part in the war. The mere mention of his name cast a flood of light upon the true history of the *Kapunda*. Coppin and I had been class-mates at the Naval Academy. We had graduated in the same year and had afterwards been shipmates in Flag-Officer Braggles's squadron in the South Atlantic. I had good cause to remember him well. He was not a Southerner either by birth or by descent. His father had been a lawyer in a village in the State of Maine, and, finding the field for his peculiar talents somewhat circumscribed, had removed to South Carolina, where he had become a "politician," and where his circumstances had improved greatly and with astonishing rapidity. The young Coppin, a child at the time of this migration, was eventually entered at the Naval Academy, where he was distinguished by the remarkable perspicacity with which he discovered what was his own interest and the pertinacity with which he pursued it. He never engaged in anything which did not promise well and eventually succeed. My conviction of the ultimate failure of the rebellion received a rude shock when I heard that Coppin had elected to follow the South, as it seemed scarcely credible that he would join any cause the future of which could be in the least doubtful. In this, as I have since discovered, I did him less than justice; the failure of the rebellion caused him no injury personally, and its ruin was, in fact, both to him and to his respected parent, who survived it some years, a means of still greater aggrandisement. I knew that Coppin had never come to Melbourne without an object, and I rapidly connected him with the *Kapunda*. So anxious was I to achieve something against that vessel that I would have waived all the objections to such a proceeding and have agreed to meet my old class-mate, but that I knew only too well that pumping him was not to be thought of. So I contented myself with replying to his message that I regretted that my public duties would not permit me to meet him and that officially we could not be friends, but

that my private opinion of him remained unaltered. The truth being that that opinion had never been a high one.

The equipment of the *Kapunda* still proceeded, and it was publicly given out that she would be ready for sea in about two weeks. This, I felt sure, meant that she was in a condition to start at any moment. I accordingly gave orders that a sharp look-out should be kept on her movements, and that any symptom of a start on her part should be at once followed by preparations on ours. I ought to mention that we had one important advantage, owing to her still being under neutral colours. Less restriction was placed upon our movements and receipt of supplies, as it could not be alleged that we were engaged in any warlike operation. I resolved to make use of this to the full extent to circumvent my friend Mr. Coppin, whose hand, I felt certain, was in the business, and whose agents were continually trying to extract information as to our own proceedings from my officers and myself. Our length of stay being unrestricted, I saw that the best way to lure him into taking a false step was to pretend to be unprepared to follow him. Accordingly I proceeded to dismantle my ship for refit, had the engines taken to pieces for examination, made contracts for supplies extending over several weeks, and generally gave it to be understood that I was likely to stay where I was for a considerable time. Coppin, however, would not bite. Even painting the ship throughout was not sufficient proof to him that the *Plymouth Rock* would not follow him directly he moved and pounce upon him when three miles from the shore and outside British territorial limits. At last it struck me that I had a clue to his suspiciousness. When any person had leave to go on shore from the *Plymouth Rock* it was only for a short time, and everyone was ordered to keep a constant look-out for a signal to return on board. My old class-mate knew that so long as such an order was in force any work being done on board the ship was not likely to result in any great delay, and that leave of absence is in general regulated by the period of detention necessary for certain repairs or refit. "At last," thought I, "I may get the better of him."

Several of my officers had more than once expressed a desire to visit the gold diggings for which the colony is so famous. But

as none worth seeing were within easy distance of our anchorage, and as a hurried start was always probable, time to make the journey could never be allowed them. I resolved to relax the order and permit those who could in general be spared to visit the shore to go. One day, after the morning parade, or "divisions," I said to the first-lieutenant—"You may give leave of absence for four days to any officers desirous of making excursions into the country." The officer appeared dumbfounded, but on regaining his power of speech said, "Why, sir, you do not mean to say that we shall positively remain settled for that length of time?" "Yes, I do," I replied, "and what is more, you may give leave to the crew, by watches, for forty-eight hours." The sailor, I may remark, does not as a rule care for frequent short leave of absence, but prefers rare visits to the shore lasting a considerable time. The executive officer seemed more surprised than ever, but only observed:—"Then, captain, I may undertake that painting work on the upper deck at last?" "You certainly may," I answered, "as well as anything else that will not occupy more than ten days," and I gave him a knowing look, as much as to say, I have at last got reliable information about the proceedings of the *Kapunda*.

My new orders were soon communicated to the officers, as I easily learnt from a shout of delight which proceeded from the ward room shortly after the above conversation had ended. And there was soon a great bustle of sending for servants, and packing of travelling trunks. Every officer not required for duty, or who could get his duty arranged for was soon on his way to the railroad depôt, and before many hours were over beyond the reach of a speedy recall. In the middle of the day I went on shore myself, leaving word that my gig was not to come for me till six o'clock. I walked ostentatiously about through the principal streets, visited several stores where I was known, and then went to the house of a friend who had kindly placed a room at my disposal. On arriving I asked to be allowed to go to this room at once, that I might write some letters. The room was on an upper floor, and from the window I could obtain an admirable view of that part of the harbour where the *Kapunda* lay, and thus

could keep an eye upon her proceedings. I noticed several boats going to her filled with men and returning empty. I saw also that they went to that side which was not visible from the *Plymouth Rock*. About three o'clock, the smoke which in general was issuing from her smoke-stack, under pretence of trying the boilers, became somewhat thicker, and about an hour afterwards I could distinctly make out a light wreath of steam escaping from the steam-pipe. Now, thought I, she will be off. Accordingly I slipped out of the house unobserved (I was in citizen's dress, I may remark), and hurried to the beach where I got a waterman to take me to my own ship. No sooner had I arrived there, than I found every thing in a state of commotion. The executive officer had begun his painting operations, half the officers and nearly half the crew were on shore, and the *Kapunda* had just slipped her moorings and was steaming rapidly towards the entrance to the harbour.

I felt certain that she would have to embark some of her warlike equipment outside, and I was confident that the delay thus occasioned would suffice to enable me to overtake her. I was confident that I must either come up with her in a short time or fail to catch her altogether, and that, at the most, only a few hours, during which I could easily dispense with the services of the officers and men left on shore, would elapse before the question would be settled. I gave orders to get up steam and start immediately. In two hours' time we were under way, and a short run from the harbour's mouth revealed our friend, the *Kapunda*, laying by the side of a sailing vessel, embarking heavy objects, unquestionably guns. The only letter I had written at my friend's was to the Consul, to beg him to recall my officers and arrange for their accommodation in our absence, if it should be prolonged. It was not. The *Kapunda* was completely caught in the trap laid for her. Coppin seeing escape impossible, as he had hoisted the rebel colours, made for the nearest rock, and ran his ship upon it. She became a complete wreck, and the Southern Ocean was again free from rebel cruisers. Coppin lost nothing by the event. He is said to have reported that everything went to the bottom, but that he really salvaged sufficient to make a hand-

some thing out of it. He returned to his adopted State, where he became a prominent member of the "carpet-bag" government, and, as we say on our side of the Atlantic, is now "universally respected and a member of the Legislature." Should the Berlin Treaty fail in effect, British officers may often be engaged in the duty of which I have told the story, that of watching a privateer.

OUR COMMERCIAL RELATIONS—CHINA AND JAPAN.

IN 1839, the Chinese Government, after issuing a series of edicts against the smuggling and sale of opium in China, suddenly seized a number of British subjects, confined them in the Hongs at Canton, and threatened them with death, on pretence that they were concerned in the opium traffic. As most of these persons were the officers and crews belonging to British merchant ships lying in Whampoa Reach, none of which had been concerned in opium smuggling, Her Majesty's representative at Macao, Sir Charles Elliott, shortly appeared upon the scene, and, after some difficulty, the prisoners were released. As, by the commission of this outrage, the Chinese had put themselves in the wrong, it was resolved by Her Majesty's Government of that day, to seize the opportunity of teaching the Celestial Emperor and his advisers a lesson of which they stood much in need, and of placing our commercial relations on a more satisfactory footing. Accordingly, an expedition was despatched to the Chinese waters, and, in the course of a few months, we were at war with China, and, although the fighting did not turn out to be quite the child's play that was anticipated, it did not last long, and was followed by the cession to England of the Island of Hong-Kong, and the opening of three ports in addition to Canton. In 1842, we concluded our first Treaty with the Emperor of China—the arrangement was styled a Treaty of Peace and Commerce, and was followed in 1843 by a tariff of import duties; in 1847 and in 1854 by a further agreement as to commerce and regulations respecting British trade.

The advantages gained by the opening of the Chinese ports and the occupation of a position on the Coast of China, and near the entrance to a principal port were soon apparent, but there was a manifest disposition on the part of the Chinese to bad faith, and to refuse the advantages which had been stipulated for. An opportunity for a fresh collision was afforded in 1857, and the war which then ensued was not terminated until a body of British troops had entered and captured Peking and burned the Summer Palace of the Emperor. By the Treaty of Tien-sin, July 26, 1858, further advantages were secured by the opening to British trade of additional ports on the East Coast and of the River Yang-tsi, though the regulations under which the latter concession was to be enjoyed were not formally framed and adopted until 1862. The Treaty of 1858 contained a stipulation for favoured nation treatment, and for the payment of an indemnity subsequently annulled by a convention entered into in 1860. As the results of these two conflicts with China, we obtained admission to all the principal ports in the Empire, and permission to trade with the interior through the great natural highway of the Yang-tsi-Kiang, which may be said to traverse the Empire from east to west. Perhaps we are more indebted for the present state of our relations with China to the capture of the Pei-ho forts and of the Celestial City than to any other events arising out of the Chinese wars. The forts in question were deemed by the Chinese to be absolutely impregnable, and the City of Peking to be for ever secure from the sacrilegious touch of the "outer barbarians." When this reliance was dissipated by British power and courage, the Chinese came to regard us with a mingled feeling of surprise and fear, which has had a beneficial effect upon our subsequent dealings with that singular people. Since the opening of the ports and principal river of China, our trade with that country has grown to very large dimensions. Our imports from China (including the port of Macao) for 1877, were valued at more than fifteen and a quarter millions sterling, of which sum the imports of tea were valued at nearly ten millions, while the exports to China for the same year were valued at more than sixteen millions, of which nearly eight millions represent the values of the produce and

manufactures of the United Kingdom—the residue being exports of foreign and colonial products transhipped in this country. There is also a trade with China above referred to, carried on independently of the direct trade between China and the United Kingdom, namely, the opium trade with India. According to the report of Mr. A. Nicolson, Her Majesty's representative at Pekin, this trade, formerly one of great importance to our Indian Empire, is undergoing a great change, owing to the great strides the Chinese have been making of late years in the cultivation of native opium. Mr. Nicolson tells us that the cultivation of the poppy in China has of late years increased and is increasing; that it is cultivated in spite of prohibitory Government edicts, and in most cases with the connivance of the authorities; that the cultivation is likely to be still further extended, owing to the large profits which can be made; that the native can readily undersell the foreign drug in the Chinese market, and, lastly, that the chief if not the only advantage possessed by the Indian over the Chinese opium lies in its superior quality. But if the native growers can produce, as they do, an article which will suit the public demand, nothing more would seem to be required, and the British opium trade with China is in danger of being superseded. Still, the relations of the British Empire with China are, and must continue to be, of great commercial value. They are the growth of many years—they have been brought to their present condition as a valuable system of exchanges by a laborious and, in some respects, a costly process—but the end has been in a great measure achieved, and there is a still greater era of prosperity—as we believe—for the British trade with China than has yet been reached.

Our commercial relations with Japan date comparatively from a very recent period. For some generations the Japanese had steadily refused to hold any communications with Europeans, the Dutch only excepted, to whom they vouchsafed certain limited privileges which were never turned to any great account. Twenty-five years ago our exports to trade with the Empire of Japan consisted of a consignment or two of "coal, culm and cinders," valued at £200, the import trade being nil. The value of our export trade to Japan for 1877 was over four millions and a half sterling,

and the import trade therefrom upwards of three quarters of a million. As with the Chinese, it was necessary to teach the Japanese that if they meant to have any dealings with us, they must neither trifle nor shuffle, and so, although we concluded a convention relating to commerce and navigation in 1854, it was not until 1858 that an arrangement of a permanent character was entered into, under the provisions of which a tariff was framed, and the ports of Nagasaki, Hakodadi, Kanagawa, Nee-e-gata, Hiogo, and Yedo were opened to British trade. Concessions further extended by the opening of the port of Osaki in 1868. Meanwhile—that is, in 1866—a revised tariff was framed which extended not only to British imports, but to those of France, the Netherlands, and the United States. It is to the energy and intelligence of the late Earl of Elgin that England is mainly indebted for the comparatively settled character of her relations with Japan. Our envoy had to contend with the suspicions of a semi-barbarous people possessing considerable intelligence, but by no means alive to the advantages in store for them by the opening up of a commercial intercourse with the Western Nations. The Japanese were not long however in seeing where their interest lay, and how it might best be turned to account. In the short space of a quarter of a century, these people have emerged from the darkness and obscurity in which they had been content to exist for ages—out of what the poet has finely designated the “night of time,” into the glorious light of modern civilization and advancement. They trade with us and with other maritime States on terms which show the value they attach to liberal commercial intercourse. British subjects are residents in their ports. Their ambassadors have been presented at the Court of Queen Victoria, and her youths visit this country for the purpose of obtaining an education which they are very capable of receiving. The opening of the Suez Canal has afforded such additional facilities for prosecuting the trade with the far East, that it may be said almost to have revolutionized that branch of the world's commerce. To this great event is due mainly the modern development of the trade with China and Japan. Much has been done in the way of extending our relations with both Empires, but much remains to be done. The events of the past twenty years have

dispelled the barbaric ignorance which both in China and Japan rendered satisfactory intercourse with foreign States an impossibility. The two Empires now take their position as States which have entered into treaty engagements with civilized Governments, and appreciate their responsibilities. Amongst their teeming populations there must be a demand for foreign products, and especially for the products of this country, which has never been properly or fairly gauged. This is a question which lies in the future, and which can only be worked out by the progress of events. For the present we may be content that, as regards China and Japan, our commercial relations have, within a quarter of a century, been placed upon a footing which our previous knowledge of these countries almost forbade us to expect, and that the prospects of the future, more especially as regards Japan, are full of promise.

RULES OF GENERAL AVERAGE.

IN our July number we published an account of a most important Conference held on the 30th May of the present year, with the object of establishing in all maritime countries a uniform practice in regard to the adjustment of claims of General Average. This Conference which was very largely attended by representatives of the shipping interest (not including Lloyd's) it will be remembered, unanimously passed several resolutions, the principal one being, "That it is desirable the York and Antwerp Rules of General Average be carried into operation." To carry out the resolutions of the Conference a Central Committee was appointed, whose names we gave in a footnote to the article in our July number.

It is needless again to discuss in these pages the merits of the question, our readers being fully aware from previous articles of the attitude taken by us; but we think it necessary to record the progress of the movement in favour of a uniform system.

We have recently learned that this Committee have been taking

prompt and energetic action with the view of informing all who are concerned in such matters with the changes proposed, their effect upon the present English practice, and the means of carrying them into effect on and after the 1st January, 1879.

The Report of the Central Committee gives a succinct history of the whole subject, and points out in the following manner what changes the adoption of the York-Antwerp Rules * will introduce into the English practice :—

“1. No jettison of cargo laden on a ship's deck will be admitted into General Average.

“This is already the general rule here, but wood goods have been admitted as an exception to a certain extent—that is to say, a jettison of timber or deals from deck is treated as a ‘general contribution’ between those parties who have expressly agreed to the shipment on deck. This exception it is proposed to abolish.

“The result will be, that shippers of cargo on deck will recover a loss by jettison direct from their underwriters, provided the cargo is insured with the clause ‘in and over all.’ In like manner, the loss of freight will be recovered direct from the underwriter on freight, if there is such a clause. The clause, ‘in and over all,’ is at present usually inserted in policies on wood goods and their freight.

“2. When a ship is for the common safety taken into a port of refuge, not merely the pilotage and port charges incurred in going into, but likewise those of coming out of such port, will be admitted into General Average.

“At present, the expense of going in is admitted, whilst the corresponding expense of coming out again is customarily excluded. In this respect, the present English practice differs from that of every other country.

“8. When, at such port of refuge, it becomes necessary to discharge cargo in order to repair the ship or for other purposes connected with the completion of the voyage, not merely the

* The full text of the York-Antwerp Rules are to be found on page 961 of our Volume for 1877.

expense of taking the cargo out of the ship, but likewise the cost of warehousing and putting it back in the ship, will be admitted into General Average.

“At present the expense of taking it out is so admitted, but the warehouse rent is made a special charge on the cargo, and the cost of reloading a special charge on the freight. In this respect, as in the former, the present English practice differs from that of every other country.

“4. The wages and keep of the crew, during the vessel's stay in such port of refuge, will be admitted into General Average.

“This is the rule in most other countries. There is no doubt that this item forms a serious part of the loss actually incurred through bearing up for a port of refuge; and, in cases where such bearing up has saved the ship and cargo from the risk of total loss, it seems to be contrary to principle, as well as impolitic, to throw this loss on the shipowner.”

The Committee are desirous of giving the greatest publicity to the proposed change, particularly that shippers of cargo may understand what is intended, and may have timely warning to arrange for the insertion of the necessary clause in their policies of insurance, bills of lading, and charter-parties. It is also proposed by the Committee to invite those shipowners who intend to avail themselves of the York-Antwerp Rules, and those underwriters or representatives of Insurance Companies who are prepared to admit the new clause into their policies, to make an announcement of their intention, in order that the same may be generally circulated.

On the Continent a similar movement is going on, which is being supported by the shipping community of the United States.

CUSTOM HOUSES.—XI.



At one time there were Boards of Customs for England, Ireland, and Scotland. We have previously shown at what time they severally coalesced. But it is noteworthy to observe that the Irish Board not only administered the Customs but the Excise as well, for that division of the kingdom. Turning to the sister department, the fact remains that it was divided, at one time, into three Boards as well, namely, that of Stamps, Taxes, and Excise. The two former were "wedded" together in 1833, and they all formed a united family circle in 1848. Arguments have since been used against the amalgamation on the grounds that, although the Boards have been joined together, the work of the officers remains as distinct as ever. But it must be obvious, in the first place, that a saving of a number of expensive commissioners must be desirable; and there is no assertion made that the work is more inefficiently done than of old. Secondly, there must be a reduction in the mere clerical correspondence between the separate staffs, when there is one head to solve any knotty point of dispute which may arise. In 1862, a Select Committee of the House of Commons was appointed to enquire as to the desirability, or otherwise, of fusing the two departments of Inland Revenue and Customs. The Committee consisted of the following:—Mr. Horsfall, Mr. Peel, Mr. Hankey, Sir Henry Willoughby, Mr. Edward P. Bouverie, Mr. Charles Turner, Mr. Milner Gibson, Lord Robert Montagu, Mr. Wm. E. Forster, Sir Stafford Northcote, Mr. Hennessey, Sir Edward Grogan, Mr. Liddell, Mr. Laird, and Sir Wm. Hayter. Subsequently Mr. Peel and Mr. Gibson were discharged, and Mr. Cardwell and Mr. Bagwell appointed instead, leaving the number, fifteen, intact.

The Committee commenced its sittings on the 18th May, 1862, and finished on the 1st July. There were eighteen witnesses examined, all of the official class. On the 2nd July, 1862, the Committee stated to the House that they had "considered the

matters to them referred, and agreed to report the minutes of evidence taken before them to the House."

On the 24th April, 1863, the Committee was re-appointed, and examined nineteen witnesses, both official and mercantile. They finally closed their sittings on the 1st July, 1863. On the 23rd June, the Chairman, Mr. Horsfall, submitted a draft Report, in which he strongly recommended the amalgamation of the two departments under one Board. Paragraph 66 of his Report, states: "In reviewing the evidence, your Committee believe the proposed consolidation practicable, and that it would tend to great economy in the cost of collection, efficiency in the service, and simplicity of arrangement in transacting business with the public. Already several beneficial results have attended the labours of your Committee: the forms of documents in the Customs have been much reduced and simplified; steps are being taken to remedy the grievances complained of with regard to British spirits and the export of beer; and arrangements are under consideration for a more economical sale of Stamps, either by the Postmasters or by the Collectors of Revenue. Every fresh simplification, however, is but another step towards consolidation." A motion was made that the Report be read a second time, and an amendment, by Sir Wm. Hayter, was put, on the ground that it went beyond the terms of the reference. The Committee divided, and one (its proposer) voted for the amendment, whereas nine voted against it. Mr. Bouverie did not vote, and the Chairman, Mr. Horsfall, having only a casting vote, was in the same position. Amongst those who voted in the majority was the present Chancellor of the Exchequer, Sir Stafford Northcote. The main question was then put, but the Committee did not divide. Instead, an adjournment was arranged for till the 1st July. On that day thirteen members were present, Sir S. Northcote being absent. Mr. Cardwell submitted a draft Report. Much of his Report, like that of Mr. Horsfall's was founded upon the evidence, but he concluded by limiting his recommendations strictly to the "reference." They were as follows:—

"59. Your Committee therefore abstain from recommending the proposed consolidation of the two departments, and conclude

their Report by recommending, 1stly, That the inconvenience complained of by the dealers in British spirits should be considered, with a view to its removal by Parliament.

"2ndly. That the favourable consideration of the Treasury should be given to changes like those suggested by the Board of Inland Revenue and the Post Office respectively, for the union of branches of the service now distinct.

"3rdly. That the respective boards should be directed to continue the system of consolidation and retrenchment by which, in past years, so many departments have been united, with a view to such further consolidations and retrenchments as it may from time to time be found possible to effect, with a due regard to the efficiency of the services, the convenience of the trading community, and the security of the Public Revenue."

The main question as to Mr. Horsfall's Draft Report was then put, with the result of five for it, and six against it. It was, therefore, lost by one vote. Had Sir Stafford Northcote been present, the numbers, probably, would have been equal, and the chairman, who had a decided leaning towards the amalgamation, would have, doubtless, decided in its favour. This great reform in our Civil Service administration was thus, fifteen years ago, held back by the narrow majority of one vote. Mr. Cardwell then proposed that his report be read; but, subsequently, by leave, withdrew it, and the Committee again adjourned. At the next meeting, 8th July, 1863, Mr. Laird proposed, "That the Committee do report the evidence taken before them to the House." This was agreed to, and the proceedings were finally closed.

As regards the evidence, the following results are noticeable:— Out of 37 persons examined there were 28 Government officials, and only 9 from the mercantile community. Of the whole number 18 were in favour of the amalgamation, 13 were of the neutral tint, and only 6 were against it. The whole of the merchants (9) were for it, and 9 officials followed suit, and of that element 6 were against it, and 13 would give no opinion. Of the 9 officials who were in favour, 4 were decidedly so, and 5 merely showed, by their evidence, a tendency that way; whilst of the 6 who expressed themselves as opposed to it, 5 were decidedly of

that opinion, and only 1 had a doubtful leaning the other way. The above analysis will show that, so far as the trading public were concerned, their representatives, limited as they were, went in unanimously for the reform. And surely the interests and views of the trading community should be more weighty in such an inquiry than the official opinion merely. Regarding those officials who showed no leaning either way, it is unnecessary here to speak, but of the others it may be desirable to say a few words. Taking the six who were against it first: there were, Mr. C. Pressly and Sir W. H. Stephenson, Chairmen of the Board of Inland Revenue; Sir T. Fremantle, Chairman of the Board of Customs; Mr. Dobell, Controller-General of Customs; Mr. St. John, Surveyor-General of Customs; and Mr. Brain, Inland Revenue, Port Surveyor of London. All were gentlemen of marked ability, and sterling honour; but, in a matter where there is a doubt, so far as one's opinion is concerned, if the result should militate against one's interest it is a difficult thing for the human judgment to remain unclouded with that influence. Turning to those—the nine—who were favourable to the scheme, we find the names of Mr. S. Price Edwards, Collector of Customs at Liverpool; Mr. Thom, ex-Controller of Customs' Accounts at Liverpool; Mr. Chapman, ex-Inspector-General of Customs at Liverpool; Mr. Daly, Examining Officer of Customs in London; Mr. Curling, Surveying-General-Examiner, Inland Revenue; Mr. Fletcher, Controller-General and Solicitor, Inland Revenue, Scotland; Mr. Gairdner, Controller, Stamp Duties, Ireland; Mr. Trevor, Comptroller, Legacy and Succession Duties, Inland Revenue; and Mr. Hawthorne, Chief Accountant, Inland Revenue. This list affords a view of a set of practical officers holding high place in their respective services; and if they had not been gentlemen of ability and probity, they would not, and could not, have held their respective posts. In favour of the value of their evidence, too, it may be assumed that the weakness of human nature could not at all influence their opinions, for, in the great majority, at least, the interest would lie the other way altogether.

Turning now to the actual statements of the witnesses, it is interesting to note the arguments *pro* and *con*. First, in order,

and one of the chief in weight of character and influence, of those who opposed the consolidation idea, was Mr. C. Pressly, Chairman of Inland Revenue. He objects—"Because the present duties of the Inland Revenue officers are so multifarious, and they have so much to do that it would be impossible for them to do more. . . . It would be impossible for one individual to manage the whole of the Customs, as well as the Inland Revenue."

As regards the question of the union of the other Boards—Excise, Taxes, and Stamps—he admits that it had been done, but qualifies it by stating that the point of efficiency and economy in consolidation had been reached, and that it was dangerous to go a step further. Following in the same line of argument, Sir Thomas Fremantle, Chairman of the Customs Board, said:—"I think it would be difficult to find a person who could be thoroughly conversant with all the peculiar duties of the Custom House, and of Excise and Stamps, so as to perform those duties entirely to the satisfaction of the Superintending Board. . . . And with reference to the number of persons employed, that must depend entirely upon the fact whether the time of all the respective officers employed under him is fully occupied or not." The other witnesses against the scheme made somewhat similar statements. On the other hand, the principal witness, Mr. S. Price Edwards, Collector of the Liverpool Customs, an officer of forty years' experience, spoke strongly in its favour. He said:—"I would make the whole under one Board, and one management, and one direction; and I say that that would not only be a saving to the community at large, but it would be a saving to the mercantile community; and I am perfectly satisfied that it could be carried out effectually, though it would involve a great deal of trouble, care, and anxiety. I think the thing is so simple and intelligible that there would not be the slightest difficulty in carrying it out; and hence it was that I said I would undertake to carry it out (at Liverpool), and I would be quite willing to forfeit my position if I did not succeed in doing so. I have a sufficient knowledge of it (the Inland Revenue) to warrant me in stating that the business of the Inland Revenue Department might very well be conducted by the Customs if it

were transferred to them." In like manner, Mr. Daly, a Customs' officer of eighteen years' experience, advocated the amalgamation. Of him, the Chairman in his report stated, that he appeared to have studied the question, and commercial affairs generally, not without success, and that his evidence supplied a large amount of valuable information. In addition to his evidence there are several letters from him, printed in the Appendix to the Report, in reply to criticisms by Mr. St. John. The last paragraph of one of those letters runs thus:—"That this reform will be carried out, I feel thoroughly convinced. It recommends itself too strongly to the sense of every intelligent and practical man to be lost sight of, and I hope to see some of its opponents its best advocates before long." This prophesy, after the lapse of fifteen years, has not been fulfilled; but there does not appear to be any reason why it may not yet be accomplished. The other witnesses, on the same side, gave some strong reasons for it, especially those belonging to the mercantile community.

In reviewing the whole evidence, what strikes a stranger more especially is the absence of a thorough knowledge of both departments, in an official sense. It is unfortunate that no officer gave evidence who had had practical experience of each. The Committee seemed to feel this. At the same time it must be allowed that there were merchants who had had dealings with both, and, although they could not give any information as to the internal working and administration of them, they were quite able to say what they considered was desirable and feasible from their point of view. This they certainly did; and a consensus of opinion appears to have prevailed amongst them, as to its desirability and practicability. Considering that the *raisons d'être* of both departments are, firstly, to preserve and conserve the revenue, and, secondly, to give facilities to trade, it seems that the views of the mercantile community should have weighty consideration. It must be evident that the greater the facilities given to the trade of the nation, the larger will be the sum paid into Her Majesty's Exchequer. Even supposing there should be some risk of safe management, the larger returns would more than compensate for it, in increased revenue.

THE PORT OF MARSEILLES.

THE Rhone, the most rapid of European rivers, takes its rise in the Alpine glaciers of the Mount St. Gothard, and, passing by Martigny, flows into the Lake of Geneva at Bouveret. Again, emerging from the further extremity of the lake, it divides the department of Ain from Savoy, thus far sustaining the characteristic description given by Lord Byron "of the blue, rushing, and arrowy Rhone." At Lyons, these waters are intermingled with the Saône, from whence their flow is nearly due south to the Mediterranean Sea. The river is navigable to steamers, and the extremely fruitful character of the surrounding country causes a considerable traffic in wine, oil, silk, fruit, and every description of agricultural produce. These articles are conveyed to the important towns of Vienne, Tournon, Valence and Montélimart. At Avignon, it is joined by the Durance, and flows to Arles, where it divides into two streams that find their outlet in the Gulf of Lyons. The river gives the name to the department of the Bouche du Rhone, of which Marseilles is the chief city. At Arles, a railway connects the banks of the Rhone with Marseilles, and, extending along the coast to Toulon and Nice, forms a junction with the *reseau* of the Italian railways.

This locality was selected at a very early date—about 600 years before the Christian era—by the Phoceans, who founded a colony here, and opened commercial relations with other ports of the Mediterranean, which have been continued to the present day; an event still perpetuated by certain of the inhabitants who form what is called the Club des Phoceans. The city itself, somewhat horse-shoe in shape, is composed of the old and new town, with handsome houses and regular streets south and east of the port, and separated from the old town by a magnificent street, which extends from the Port d'Aix to the Porte de Rome. The middle part of this street, called the Grand Cours is sheltered by trees; the houses on either side are good; it has handsome fountains,

and is one of the chief places of public resort ; but the favourite promenade is the Rue Cannebière at right angles to the former. Many of the narrow streets in the centre of the town have been pulled down, and wide thoroughfares are now opening in all directions, parallel to, and of the same breadth as the Cannebière. Another magnificent promenade is the Prado, three miles in length, well shaded with trees, the favourite resort of the Marseillais who flock thither in carriages and on foot upon a fine Sunday, when the scene is most enlivening. At the further extremity of the Prado is the Chemin de la Corniche, commanding a splendid view of the Mediterranean, and the Chateau d'If. The Chateau Borrelly leading out of the Prado has a fine museum well worthy a visit. A new street, Rue Imperiale, intersects the oldest parts of the city, and sweeps away its worst sections. One of the most splendid ranges of warehouses is that situated to the east of the Bassin du Lazaret, equal in extent to the Temple of Luxor, reported to have cost half-a-million sterling, and capable of storing 50,000 tons of merchandise. An abundant supply of water from the River Durance, which is brought from a distance of sixty miles to Marseilles, adds to the fertility of the surrounding country and the salubrity of the city.

The harbour is one of the finest in France. It is strongly defended by two forts, one called the Tower of St. John, on the north, and the Fort of St. Nicholas on the south. There is excellent anchorage ground for men-of-war and other large ships about two miles W.S.W., between the Isles of Ratoneau and Pomegues ; and on Ratoneau Island is an hospital for those whose health is dubious. A lighthouse, with a revolving light, 131 feet in height, is erected on the Isle de Planier, about ten miles from the city, and there is another on Fort St. Jean. Ships having arrived within a quarter or half a mile of the Isle d'If, usually heave-to for a pilot. The charge for pilotage is four sous per ton in, and two sous per ton out, for French vessels and vessels belonging to powers having reciprocity treaties with France.

Marseilles has of late years made great progress in extent, population, and commerce. The port of La Joliette has been improved and made to communicate with the principal harbour, giving 40

acres of water and nearly 2,500 yards of quay accommodation. Since 1855, four other ports have been formed, adding, with the Napoleon docks, nearly 200 acres of water and about nine miles of quay. Around the docks large warehouses have been erected, with all modern appliances for loading and unloading vessels. In 1867, a new Custom House was built. The progress is not confined to the town, but extends to the surrounding districts, which are occupied by a new population employed in raising vegetables, fruit, &c., in the reclaimed and improved lands watered by the Durance canal.

The city is the grand emporium of the South of France, and the centre of nine-tenths of her commerce with the countries bordering on the Mediterranean. Marseilles engrosses almost the whole trade between France and Algeria. The city is now also the principal station for the intercourse carried on by steamers with Malta, Alexandria, and Constantinople. Besides the steamers employed by the Government, there are a great number of boats belonging to private companies, chief among them the Messageries Maritimes. All the principal States in Europe and America have their resident Consuls. Mr. Mark, who has for many years represented British interests, furnishes an annual succession of reports upon the trade and shipping at the port. The trade consists chiefly of soap, olive oil, wine, brandy, corn, flour, dried fruits, oranges, and other products of the southern departments; salt provisions, tobacco, wool, skins, iron, cotton, dyewoods, and other articles of colonial produce. The most important manufactures are soap, soda, and other chemical products, woollen hosiery, bonnets and hats, olive oil, glue, starch, vermicelli, sheet lead, glass, earthenware, &c. In the building docks a great number of war and other vessels are built. The article soap constitutes the chief manufacture, and in 1872 was produced to the extent of 50,000 tons, of which 9,000 were exported to foreign ports. Of these, 2,300 tons were sent to Algeria, 2,100 to the United States, 1,200 to the Mauritius. Only 100 tons of Marseilles soap were sent to the United Kingdom. During the same year, 104,425 bales of cotton were imported, the greater part of which were re-exported to Spain, Switzerland, and Germany; 22,000 bales of silk, whereof 4,474 bales were sold on the spot; the remainder

was mostly forwarded to Lyons and London; 1,159,160 kilos of cocoons were received from the Levant, besides 1,500,000 cartoons of silkworm's eggs. Of wool, 181,000 bales were landed, 36,443 bales of which were re-exported. The wool came principally from Algeria, Morocco, and the Levant; 8,600 bales of sheep and lamb skins were imported from Buenos Ayres and Monte Video; 55,000 bales of goat skins arrived from the Levant, Algeria, and Morocco, or about 2,600,000 skins. Hides to the number of 960,406, mostly from the River Plate and Brazil. There were during the same year, 345,000 tons of iron ore imported, mostly from Spain and Algeria. About 53,000 tons were smelted at Marseilles, the rest were sent up to the blast furnaces of the Loire, Creuzot, and Franche Comté. About 8,000 tuns of wine were imported, and the exportation thereof amounted to 37,000 tuns. The United States took about 4,000 tuns, and Egypt, Brazil, and the River Plate about 3,000 tuns each. The French Colonies of Martinique, Guadeloupe, La Réunion, and Cayenne, absorbed about 6,000 tuns between them. England only took 190 tuns; 1,000 tuns of brandy, rum, and other spirits were imported; the exportation of brandy reached 4,000 tuns. The Customs' revenue during the year amounted only to 14,500,000 francs, as compared with 17,600,000 francs, and 22,870,000 francs collected in 1870 and 1871 respectively. It is probable this arose from the general depression in trade, and the injudicious application of differential duties.

We learn from the same Consular Reports that Marseilles in 1876 was visited by a large amount of shipping: viz., 8,689 vessels of the collective burden of 2,605,890 tons. For several years past the vessels frequenting the port have been of a more powerful and capacious stamp, and the use of steam shipping has assumed larger proportions. The relative proportions between French and foreign shipping were as follows: French vessels 5,246, tons 1,656,252; foreign vessels 3,443, tons 949,638, showing, with regard to French shipping upon a comparison of former years, a diminution in the number of the vessels, but an increasing amount of tonnage. The foreign shipping, on the other hand, had increased both in number and

tonnage. The steam shipping, which entered the port in 1876, consisted of 3,378 vessels of 1,750,760 tons burthen, against 5,311 sailing ships measuring collectively 855,130 tons. The different basins, composing the port of Marseilles, have now 12,616 longitudinal metres of quay space available for commercial operations.

The amount of steam shipping to the port will be seen by the following statement:—

	Names of Owners.	Number of Ships.	Tonnage.	Horse Power.
1	Messageries Maritimes	58	77,202	21,530
1	Valery Frères et Fils	26	11,569	4,710
1	Aet L. Fraissinet et Cie... ..	20	9,384	2,470
1	Société Générale de Transports Maritimes	13	12,217	2,380
1	Compagnie de Navigation Mixte	13	6,543	1,910
1	N. Paquet & Cie	6	3,057	795
1	Cyp, Fabre & Cie	4	2,768	560
11	Various	—	5,390	1,810
18		154	128,130	46,165

In addition to the above there are 157 sailing vessels, collectively of 58,887 tons burthen, belonging to the port. There was a considerable increase in the amount of British shipping visiting the port as compared with the preceding year: 197 steamships, collectively of 166,160 tons burthen, and 92 sailing vessels, of 33,417 tons burthen; whilst in 1875 there were 177 steamships, of 136,319 tons, and 90 sailing ships, of 25,403 tons. The large increase in 1876 was chiefly due to the East India trade, numerous large steamers having arrived by way of the Suez Canal with cargoes of oil seeds, wheat, &c.

The amount of British shipping that entered the port of Cette was small, compared with the preceding year. In 1875, 63 vessels, of 21,266 tons, entered the port, whereas, in 1876, only 40 ships, of 12,487 tons, arrived. In both years a large proportion of the vessels came laden with coal pitch for the manufacture of patent fuel, with the small coal from the mines near Cette.

THE "PRINCESS ALICE" AND THE "BYWELL CASTLE."

COLLISION OFF MARGARETNESS, RIVER THAMES,

SEPTEMBER 3RD, 1878.

IT is our painful duty to record, as far as is at present possible, some of the sad facts of this most terrible disaster.

The *Princess Alice* was a paddle saloon steamer, 158 tons register; length, 219 ft. 4 in.; breadth, 20 ft. 2 in.; depth, 8 ft. 4 in. She was employed in making excursions from London down the river to Gravesend and Sheerness, and belonged to the London Steamboat Company.

The *Bywell Castle* is an iron screw steamer, 892 tons register; length, 254 ft. 3 in.; breadth, 32 ft. 1 in.; depth, 19 ft. 6 in. She is employed as a collier, and belongs to the firm of Hall Bros., of London.

On the evening of the 3rd September the *Princess Alice* was returning from an excursion from Sheerness, with a very large number of passengers on board. The tide was nearly half-ebb, and, consequently, the *Princess Alice* was making the best of her way home against the tide. What course she took it is not yet possible to say, the evidence on that point being at present somewhat conflicting. The *Bywell Castle* was outward bound, light in ballast, and was coming down the river with the tide. Near Margaretness she struck the *Princess Alice* on her starboard sponson, and cut into her with such terrible force that she sank in a few minutes after the collision. The fearful scene which followed has been depicted with all its attendant horror in the daily and weekly press, but it will serve no useful purpose to reproduce those heart-rending accounts in these pages. At the time of writing this, the number of persons reported as saved amounts to 152, the number of dead bodies recovered to 640, and the number of persons missing is said to be more than 50; from these returns it appears very probable that the number on board exceeded 800.

We do not of course offer any opinion at present upon the cause of the disaster. Various tribunals will, no doubt, for some little time, be engaged in conducting investigations in connection with it. When their judgments are published we shall endeavour to extract some practical lessons from the shocking catastrophe.

Of the tribunals which have acted, or which may possibly be called upon to act, the following is a brief summary :—

The coroner's inquest expresses the verdict of a jury as to the immediate cause of the deaths of those persons whose bodies have been recovered.

This inquiry has elicited a considerable amount of evidence which may be of service in the official or Board of Trade inquiry to be held at Poplar, before Mr. Balguy, a stipendiary magistrate who has had great experience in such matters. The purpose of this official inquiry is to elicit if possible the actual cause of the disaster, and by whose default it came about.

As regards the question of damage, it may be that a suit will be instituted in the Admiralty Division of the High Court of Justice by the owners or underwriters of the *Princess Alice*, the *Bywell Castle* having apparently received no material injury.

Further, it may be that the living sufferers by the calamity, those who have lost relatives on whom they were more or less dependent, will seek in the ordinary courts of law some compensation for the loss sustained by them.

Lastly, we have much gratification in recording the fact that Lord Sandon, the President of the Board of Trade, has nominated a committee of gentlemen, selected from the Board of Trade, the Thames Conservators, the Trinity House, the Admiralty, and the Steamship Owners' Association, to consider the whole subject of the navigation of the river, the rule of the road, the lights to be shown at night, and the signals to be made, with a view to making some regulations which shall conduce to the greater safety of navigation in the river.

YELLOW FEVER.

THE list of what may be called casualty events of the day is, at the present, more than usually numerous and grave. The *Princess Alice* catastrophe seems, perhaps, the most appalling, chiefly because it occurs close to home, and was a terrible recoil from healthful pleasure to overwhelming misery and mortality. The Abercarne colliery explosion is not the less disastrous, because it occurred under circumstances of work instead of pleasure. Both accidents may, in some sort, be called preventable ; but in referring to the fearful outbreak of yellow fever that is just now depopulating some of the towns and ports of Central America, it is difficult to say how much of such a calamity could not have been mitigated by care and foresight on the part of those who had to deal, so to speak, with the infancy of the epidemic. Certain it is, that the British public has, as yet, formed no adequate conception of the appalling misery and desolation that exists in those places, from which we have as yet received, though almost day by day, only bare bits of death, disease, and destitution. It has been left to our imagination to fill up the attendant circumstances, for the local authorities and the doctors have been far too busy, and in some cases too ill, to forward for public perusal any details of an epidemic of yellow fever that will probably surpass in virulence and extent all its predecessors during the last two centuries. We say the last two centuries, because few reliable records of any kind exist beyond that date. According to La Roche, probably the best authority on the subject, epidemics of yellow fever occurred in America in 1699, 1741, 1747, at tolerably frequent intervals up to 1802-5, and again in 1820, the last severe epidemic occurring in 1853. The disease has never been known to originate in any region situated at an altitude above the level of the sea of more than 2,500 feet, although Humboldt speaks of it as having been brought to, and flourishing at, the Farm of the Encero, in Mexico, a height of 3,200 feet ; on the other hand, although

certain parts of Jamaica are notoriously liable to its inroads, the Phoenix Park, which attains an altitude of 2,000 feet, is, according to Tulloch and others, always a safe place, and, in other respects, remarkably healthy. In Grenada, for instance, Mount Cardigan, which is 500 feet, and Richmond Heights, 730 feet, have usually escaped, as also St. Domingo, Vicksburg, 350 feet, being almost one of the highest altitudes at which it has ever been generated.

The chief and unvarying condition of the existence and continued propagation of yellow fever is an atmospheric heat of at least 75° Fahrenheit. The predisposing causes are a swampy, low-lying, and crowded district, filth, intemperance, fatigue, and exposure to night air and dews. So from Brazil to Charlestown in one direction, and from Barbadoes to Tampico in another, the causes, or several of them, are in constant operation. And the same conditions have existed occasionally at Xeres, Cadiz, Carthage, Alicante, Seville, &c., though it is probable that in all the outbreaks at these places, as well as at Leghorn, Lisbon, and Gibraltar, the disease was distinctly imported from the Western Hemisphere.

The true area of the disease (*i.e.*, what may be called its home) includes the Carribees and Bahamas, the contiguous coast of Columbia and Guatemala and the shores of the Mexican Gulf, from Cape Catoche on the west to Cape Sade on the east, and running thence along the coast of America, to Wilmington (North Carolina), Norfolk, Baltimore, Philadelphia, New York and Boston.

It is worthy of record that the disease has never appeared in China, Singapore, Siam, or Ceylon, only occasionally on the African coast, Senegal, and the Gold Coast, and three times only during the last century in Cayenne.

It is found that acclimatization influences the disease very considerably, *i.e.*, that new comers are much more liable to its attacks than those born in the country, and than creoles or any other of the coloured races. Thus in the epidemic of 1853 the mortality at New Orleans among the creoles was 3.58 per 1,000, and among the varieties of white population from 30 to 328 per 1,000; the natives of England dying at the rate of 52.19 per 1,000, and those of Ireland at the rate of 204.97 per 1,000 of those attacked.

No immunity from subsequent attacks appears to be enjoyed by those who have suffered and escaped. Females of a plethoric, sanguine, and robust habit enjoy a comparative immunity from the disease, but with males of this temperament the reverse is the case, and children are generally declared to be not very susceptible, though there is, according to our own experience, some reason to doubt this assertion. Among troops the mortality has always been very great. Thus during the epidemics in the West Indies from 1802 to 1807 inclusive, the mortality among the French varied from 9 to as much as 57 per cent. of those attacked. The disease may, broadly speaking, be said to extend to between the 22nd and 23rd degree of south latitude, and northwards to the 42nd degree, on the Atlantic coast to 35th degree, and to the 8th degree on the Pacific.

The duration, &c., of the disease is very briefly epitomised in the authorised *Ship Medical Guide*. About six days may be allowed for its incubation, and the illness may last from 24 hours to 30 days. The result is hopeful if the patient survive to the fifth day. Before recapitulating the particulars that we have collected respecting the present epidemic, it will be well to refer briefly to a limited but somewhat severe outbreak of yellow fever that occurred at Swansea in 1865. The vessel *Hecla* arrived at that port on the 9th of September from Cuba, with one case of undoubted yellow fever on board. This man was taken at once to a lodging-house in the town, and died the next day. Swansea is in latitude 51° 37' N. and 3° 55' longitude W. The highest temperature in September, 1865, in the sun, was 94°, and in the shade 78° Fahrenheit. But the gravity of the case did not seem to have been appreciated at the time, for several days elapsed before the circumstances were made known, and it was not until the 28th of the month that the vessel was removed out of dock, isolated and fumigated. Meanwhile, doubtless in consequence of the high temperature, 30 cases had occurred in the town and suburbs, all of which were traced, directly or indirectly, from the ship, or from the first case. Of these, 17 died, and 7 of those who recovered were marked doubtful. The ship was thoroughly fumigated with sulphur and charcoal, the bilges disinfected, and a clearance given

on the 14th of October, *i.e.*, 35 days after the importation of the disease. This is, we believe, the last definite importation of yellow fever into the United Kingdom, and is worthy of record because it illustrates in a very marked degree the definite causes and conditions of its propagation. There is a consensus of opinion among physicians that the malady is the same in all parts of the world, and that wherever it occurs there are no special symptoms to enable any sort of etiological classification to be made. We have, in gleanings the above particulars, referred chiefly to the works of La Roche, to Dr. F. T. Roberts' *Practice of Medicine*, and as regards the Swansea outbreak, to a report on the subject by Dr. Buchanan, now senior medical inspector to the Local Government Board, who, being then one of the inspectors to the Privy Council, was sent down to advise the local authorities as to the proper steps that should be taken to avert the spread of the disease.

We have recapitulated thus briefly the signs, symptoms, and history of this pestilence, because among the casualty incidents of the day it occupies just now, in the other hemisphere, an unhappily prominent position. Little was heard as to the present epidemic in this country until some eight or ten weeks ago, and from then till now we have received nothing through the press, or through consular or other official sources but a very bare, though almost diurnal detail of facts, simply indicating the number of sick, the extent of the mortality, and of the dire misery and distress caused thereby. New Orleans, as usual, seems to have been the focus, and from thence it quickly spread to Vicksburg, Memphis, Louisiana, and Grenada. No variety of type appears to be observable, but there is no doubt that the disease has spread with almost unprecedented rapidity, partly on account of the favourable conditions as to temperature, and partly also because the population of these cities (that of New Orleans particularly) has, lately, much increased, so that a most unhealthy degree of overcrowding exists, or rather did exist, in the riparian districts. Pensacola and Mobile put all infected and even suspected places in quarantine at a comparatively early period, the kind and extent of quarantine enforced being left to the discretion of the local authorities.

On the 14th of August there were, in New Orleans, 135 new cases and 20 deaths, and, at this time, the disease had reached Grenada, having been carried up the Mississippi by the steamboats. The result was then that all but 700 of the inhabitants of Grenada had left, and no less than 150 of these were affected.

On the 21st of the same month, 1,400 cases and 436 deaths had occurred in New Orleans. About this time it was remarked that at least 60 per cent. of the fatal cases had occurred among foreigners or those not regularly acclimatized, and that 75 per cent. of the remainder were children. (This statement is a direct contradiction to the record quoted above as to the comparative immunity of children.) On the 27th, again, 30 deaths are reported as having occurred at Memphis, and 24 at Vicksburg, the former having about 22,000, and the latter about 5,000 inhabitants. Up to the 2nd of September 1,700 cases had occurred at Vicksburg, and in the same space of time there were 53 deaths at Memphis. The *Lancet* thinks it worthy of note that nearly all the places affected at present are situated between 30° and 36° north latitude. More than 400 new cases were reported at Vicksburg on the 24th ult., 20 deaths having occurred in 30 hours! And almost the latest accounts give a roll of 87 deaths at New Orleans and 112 at Memphis on the 10th ult.; on the 16th, 111 at Memphis and 23 at Vicksburg, and 22 at the same place on the 18th. The last accounts that we have perused indicate that the virulence of the disease is somewhat abating, but the Central Committee for relief at New Orleans have applied to the Government for assistance in order to help the destitute sick through the convalescent stages of the disease, which are sometimes very critical, symptoms appearing that require an active as well as a stimulating and so somewhat costly plan of treatment, involving much expenditure in wine, quinine, and very good nourishing food.

One of the most interesting and instructive monographs that this outbreak has produced from a professional pen is by Dr. Andrew Dunlop, of Jersey, who had for some time medical charge of the crew and electrical staff of a ship employed in laying a cable between Key West and Cuba. During the trip, it was a specially noteworthy fact that the number and severity of cases of sickness

was far greater among the cable hands than among any other section of the ship's company. There were 19 of these hands, all of whom slept between decks, on a level with, and close to, the openings of the two large tanks in which the cable was stowed. These tanks contained water, which of course gave off as usual sulphuretted hydrogen in considerable quantities. These men were however better fed than the crew, but went on shore oftener, especially on the beach when the shore ends were being laid. There were 19 of them; 14 cases of fever occurred among them, and 10 of these proved fatal—a terrible mortality. This and other somewhat less glaring observations, made carefully and recorded precisely, all went to prove that yellow fever spreads by a common local cause, and in this respect is similar in its nature to typhoid fever, but not to small pox or scarlet fever. One common cause being atmospheric heat, we shall find the present epidemic diminishing as the winter approaches; and another common cause being the inhalation of impure air, doubtless accounted for the number and fatality of cases among the cable men of the *Narra*, Dr. Dunlop's ship.

Another constant peculiarity of yellow fever is the great partiality that it exhibits for ships, harbours, and coast towns. Hirsch says, that out of 297 epidemics in America, 159 were in coast towns, 133 in towns or navigable rivers, and only 5 in places from 9 to 12 miles inland. The local character of the malady was again exemplified at Gibraltar also during the epidemic of 1828. Four thousand persons left the town and encamped in the neutral ground, with all their furniture, and the disease appeared to be arrested at once.

There are many circumstances in connection with the rise and progress of this terrible malady, that viewed, calmly and practically, should lead us to class yellow fever as in some sort one of the preventable type of the so-called zymotic diseases. It must be remembered that it is very distinctly carried in clothing; and as will be seen in our advertising columns, the Sanitary Authorities of the Port of London have, in view of the present epidemic, re-issued and advertised one of their standing official orders relating to the landing of deceased seamen's effects. There are many

other precautions to be taken by shipmasters that will greatly assist to mitigate risks run by the crews of vessels that are just now compelled to trade in Central and South American ports.


It is hardly necessary to indicate that, in the presence of so dire an epidemic, the prevention of disease and maintenance of health must very much depend upon the sort of food and drink taken. Regular meals of food as good and varied as is procurable, and an almost complete abstinence from alcohol, have saved many lives in the midst of many raging pestilences. The bilge should be disinfected at least once a day with chloride of lime or carbolic acid water, and the quarters of the crew, as well as their bedding and clothing, should be kept scrupulously clean. As little work as possible should be done either in the glaring sun or in the evening dews, and carelessness on this head has caused much sickness at Cyprus among our soldiers and marines. Beach work is to be avoided as much as possible, and ballasting from the beach during the presence of yellow fever in a district is said to be distinctly hazardous, because the fomites, so called, of the disease, appear to stay in gravel and small loose material in the low miasmatic parts of the country to which the fever prefers to cling. A notable instance of this is given in the last report of Dr. J. W. Woodworth, Surgeon-General to the United States Marine Hospital Service, who records an outbreak of yellow fever in July on the receiving ship *Vermont*, at the Navy Yard, Brooklyn. During one week in the month, a total of eight cases occurred, three of which were fatal, and according to the investigations of the sanitary authorities, the disease seems to have originated "from the ballast of the barque *Juanita Clar*" which left Havana on the previous 1st of May. This ballast consisting of quarry chippings and sand, was deposited on the dock, on either side of the *Vermont*, and about one hundred yards distant from her. Prompt measures were taken by disinfection, and covering with fresh earth, (one of the very best disinfectants as well as deodorants) and no recurrence of the disease took place.

If deaths occur, the corpses should be covered with chloride of lime and buried without any delay at sea; and if fumigation of the vessel be required, it should be done thoroughly for at least

10 hours with sulphur and charcoal, and should include cargo, as well as the bedding, clothing, and quarters of crew and passengers. If the fever has once gained a hold in the ship, the best way of stopping its advance is to sail or steam into temperate latitudes with the least possible delay, as the main condition of its existence is thus at once got rid of.

In the matter of quarantine we have little to say. Yellow fever is still one of the three diseases that the Customs authorities in this country are called upon to deal with specially under the old Quarantine Acts. But it is probable that port sanitary authorities would, under the provisions of the Public Health Act, 1875, be also responsible, and, indeed, they are so considered by the terms of an order just issued under the auspices of the Local Government Board. Under port sanitary authorities, quarantine regulations resolve themselves into a sort of intelligent sanitary supervision, that deals with the disease without inflicting hardship upon crews and passengers, or unduly obstructing commercial interests. The people of New Orleans have, during the last epidemic, incurred much odium by driving away the inhabitants of Memphis, Vicksburg, and other towns who have come to them in their distress, although it is now well known that yellow fever is not, in the true sense of the term, a contagious disease. But with ordinary care we need not ever fear that the disease will obtain a footing in the ports of the United Kingdom.

A COLONIAL NAVAL VOLUNTEER FORCE.

HE following is an abridgment of a valuable paper recently read by Mr. Thomas Brassey, M.P., before the Royal Colonial Institute:—

It is not surprising that the idea of organising a Colonial naval reserve should have been deferred to the present time. The growth of our Colonial Empire has been so rapid that

the resources, out of which such a force could be created, have only lately been called into existence.

The time seems now to have arrived when the colonies should be reminded of their obligations to provide for their own self-defence, and of their duty to take a part in those naval and military preparations, the cost of which should be borne in due proportions by the whole empire.

From an Imperial point of view, the best defence of the colonies consists in a powerful navy; and it is because the naval service is constituted in part for the defence of the colonies that we may reasonably claim from all our dependencies contributions in equitable proportions, to be mutually and amicably determined, towards the naval expenditure of the country.

The latest tables, showing the progress of British mercantile shipping, give the total tonnage of the mercantile navy of the British Empire at 8,183,887 tons, and the tonnage of the United Kingdom only at 6,886,360 tons. The difference between these amounts (1,800,000 tons) represents a total tonnage for the colonies but slightly inferior to the combined tonnage of the French and German Empires.

The statistical tables, which have recently been presented to Parliament, contain gratifying evidences of the rapid increase in the tonnage of our colonial shipping. I give a few figures to show how widely distributed and elastic are the resources, from which our Imperial navy might be recruited, if naval reserves were organised, as they ought to be, in our colonial possessions.

Tonnage of Vessels on the Register.

Colony.		1871.	1878.	1875.	1876.
Victoria . . .	{ Steamers . . .	9,608	10,623	12,656	
	{ Sailing vessels	52,970	55,688	61,228	
Port Adelaide .	{ Total tonnage .	17,048	22,361	22,866	
Tasmania . . .	{ Steamers . . .	2,422	3,135	2,773	
	{ Sailing vessels	15,125	14,894	15,544	
New Zealand .	{ Total . . .	27,107	30,035	42,025	
Canada . . .	{ Steam . . .	—	6,783	—	7,192
	{ Sailing . . .	—	1,073,718	—	1,260,893

Queensland.

		Total tonnage Entered	Total tonnage Cleared
1873	British	170,173	169,476
"	Foreign	5,999	6,876
1875	British	390,069	362,703
"	Foreign	5,165	6,245

It must be evident that the owners of such a large tonnage will be quite able to contribute their share of the cost of defending the harbours from which they trade.

The Colonial Governments are now beginning to consider the question of local defence, and in one or two instances they have provided low freeboard ironclad turret ships for that purpose. Victoria has lately voted a sum of £350,000, together with an annual outlay of £73,000, to provide ships, artillery, torpedoes, and rifles for the local defence. New South Wales has voted a like sum for the same object. The colony has formed a Volunteer Naval Brigade of 250 men, the annual expenditure on this little force being £3,916. In the Canadian Dominion, a committee appointed by the Royal Halifax Yacht Club, in a report dated April 14, 1873, strongly recommend the organisation of a Naval Reserve, a coastguard to protect property in the event of shipwreck, and a Lifeboat Institution.

These preliminary and spontaneous efforts justify the presumption that the colonial governments would be fully prepared to bear their share of the expenditure required for any complete scheme of naval organisation and defence, and we may pass on to consider what kind of force would be most useful for colonial service.

There can be no practical difficulty in raising a Naval Reserve in the colonies. If it be intended to provide the means of manning sea-going ships, the Naval Reserve, which has been formed for the defence of the mother country, presents a model for imitation. If coast and harbour defence alone is attempted, the system of organisation adopted for the Royal Naval Artillery Volunteers may be followed with advantage.

The Imperial and colonial governments should combine to create a fleet of sea-going ships, which should be kept in reserve in the harbours on the Australian station.

Torpedoes and torpedo boats should be provided for harbour defence. The colonial governments should man the sea-going ships stationed in their own harbours with their Naval Reserves, and they should provide the *personnel* necessary for harbour defence by the organisation of corps of Naval Artillery Volunteers, after the model of those which have been successfully established in London and Liverpool.

The number of sea-going ships and torpedo boats and the forces of Naval Reserves and Naval Artillery Volunteers which would be necessary to man them, is a subject worthy of mature examination by a Royal Commission. Such a commission should include, not only officers of acknowledged capability to deal with technical questions, but representatives, who should be authorised to express the views of the colonists with reference to the proportions in which they would be prepared to contribute to the expense.

I wish to insist emphatically on the importance of the work that would devolve on such a commission. We cannot conceal from the world the wealth accumulated in the colonial capitals, all of which lie on the sea board. The inhabitants possess the courage and the resources necessary to repel an attack. But these places are at present defenceless. Floating and stationary defences cannot be designed, a Naval Reserve or Militia cannot be created, without naval and military advice. The colonies have no body of officers to assist them in such a task. It is for the mother country to take the initiative, in the discharge of the urgent Imperial duty of preparing a scheme for the mutual self-defence of all the dependencies of the empire.

I am not competent to enter into the details of such a scheme as the Royal Commission which I recommend would be enabled to prepare. A degree of local and professional knowledge, to which I make no pretensions, and which, indeed, cannot be combined in any individual, would be required in order to prepare a satisfactory plan. As an example of what might be done, I will, however, venture to refer to some notes on the formation of a Naval Reserve in Canada, put together after visiting the ports in the Gulf of St. Lawrence in 1872.

It is believed that in the Canadian Dominions there are not less

than 87,000 seafaring men. In 1872, about 1,000 decked vessels and 17,000 open boats, manned by 42,000 men were employed in the fisheries alone. The recently published tables give, later information as to their actual condition :—

Statistics of the Fisheries of the Dominion of Canada in the year 1875.

	Vessels employed	Men	Boats employed	Men
Ontario	11	46	828	2,322
Quebec	134	550	4,625	9,090
New Brunswick ...	235	1,475	3,661	6,369
Nova Scotia	615	5,813	8,619	17,906
	995	7,884	17,733	35,687

Total number of men, 43,571.

The value of the produce of the fisheries of the Dominion is given as follows :—

Ontario	£94,415
Quebec	332,137
New Brunswick ...	505,761
Nova Scotia	1,161,220
Prince Edward's Islands	62,276
Newfoundland	1,325,034

The statistics of the fisheries as to boats and men employed are not given for Prince Edward's Island and Newfoundland. The relative value, however, of the produce justifies the assumption that the number cannot fall short of those of fishermen quoted for Nova Scotia and Ontario. It is stated in the Annual Report of Governor Hill for 1872, that about 10,000 men were engaged in the seal fishery of Newfoundland. We may therefore add to the numbers already given not less than 25,000 men employed in fishing on the coasts of Newfoundland and Labrador, which will bring up the number of hardy fishermen in our North American possessions to a total of not less than 68,000 men.

In a lecture delivered at the Royal Colonial Institute, on February 4, 1879, M. Bourniot, a member of the Canadian Senate, remarked that, "In the men that sail the fishing fleets of Canada

we see the elements of a very powerful marine, which will be found invaluable in times of national danger. It may be estimated that the total strength which the fisheries employ throughout all British North America is composed of some 70,000 men." M. Bourniot was of opinion that there was no reason why training ships, supported by the local governments, should not be started in the colonies if the system were found to work well in the United Kingdom.

The climate of Canada and Newfoundland, throughout their long winter season, is so severe that it is impossible for fishermen to follow their regular vocation. The long interval of enforced idleness during winter would afford an admirable opportunity for regular attendance at drill, without interfering with other lucrative employment. A vigorous effort should be made to enrol these colonial fishermen in the Naval Reserve of the British Empire. They are thoroughly inured to the hardships of the sea by the severe weather which frequently prevails on their native shore. They are among the most loyal and devoted subjects of the British Crown. There would be no difficulty in giving to the fishermen of Newfoundland and the maritime provinces of the Canadian Dominion an opportunity of embarking for their annual drill at a port easily accessible from their own homes. A vessel should be commissioned specially for the purpose of training seamen, who have joined the Naval Reserve from Newfoundland, from the ports in the Gulf of St. Lawrence, and from Quebec, Montreal, and other places on the great river. The vessel should be of the corvette class, having a covered deck, in which the battery of guns would be placed. In such a vessel the drills might be carried on with regularity in the most severe weather. The drill ship would be stationed, during midwinter, at St. John's. The harbour is admirably sheltered, and a large population of fishermen is congregated in the town and its vicinity. During a portion of the winter the drill ship should be moved to other points on the coast, where the fishermen are settled in large numbers. Thus the members of the Colonial Naval Reserve would have an opportunity of going through the annual course of drill without being exposed to the hardship of a long sea voyage

to St. John's in their small fishing boats in midwinter. Along the coasts of Newfoundland there are numerous admirably sheltered harbours, which are rarely frozen up. An anchorage might be selected for the training ship both in Placentia Bay and in Trinity Bay, perfectly secure, and easily accessible to the large numbers of British seafaring men dispersed along those distant shores. As the spring approached, and the navigation was opened in the Gulf of St. Lawrence, the ship could proceed from harbour to harbour along the southern shores of the Gulf. At Sydney, Charlottetown, and Gaspe, many seamen could be enrolled for the national reserve. It should be arranged that the drill ship should visit the harbours mentioned sufficiently early in the season to enable the seamen sailing from those ports to go through their annual drills, before the navigation of the St. Lawrence was fully open. The reserve men might thus have the opportunity of attending on board the training ship, without suffering the serious inconvenience which would be felt if they were taken from their employment afloat in the season of open navigation. Another similar training ship should be stationed at Halifax, which should visit the numerous harbours on the coast of Nova Scotia and in the Bay of Fundy, in the winter season, when multitudes of fishermen are compelled to remain on shore in consequence of the inclemency of the weather.

The establishment of a Naval Reserve in our North American Colonies is not only to be desired as a means of adding to our naval strength for Imperial purposes, but also for defending the colonies themselves. All our colonies, including India, should have a defensive force of their own. Organisation beforehand is essential to success in war.

It is one of the main recommendations of the scheme which I have advocated on this occasion, that it need not involve the country in a lavish expenditure. It is well to prepare in advance plans of earthworks, to be thrown up when required, and to organise corps of naval volunteers. It does not follow that we should undertake the construction of the extravagant fortresses that surround our arsenals at home, or withdraw a single man from the well-rewarded labour market of the colonies. To build fleets

and forts, and to maintain armies in every dependency of the Crown, would be an exhausting and an unnecessary effort. I approve the language held by Sir Robert Peel in 1850, when he said: "I believe that in time of peace we must by our retrenchment consent to incur some risk. I venture to say that if you choose to have all the garrisons of all your colonial possessions in a complete state, and to have all your fortifications secure from attack, no amount of annual expenditure will be sufficient to accomplish your object."

Since the date of Sir Robert Peel's speech, the noble Volunteer movement, one of the most honourable features in the recent history of this country has been originated. A quarter of a century ago, the voluntary submission to drill and discipline of large masses of men, in numbers far exceeding those enrolled in the regular army, was not anticipated by British statesmen. By the extension of the Volunteer movement, garrisons can be maintained in the largest fortresses and in the most distant outposts, without adding in any appreciable degree to the charges on the Imperial and colonial revenues.

The mother country could readily furnish a staff of officers and instructors for the purpose of training the Colonial Naval Reserves. The number of officers required must depend on the strength of the force which it is deemed expedient to raise. In whatever numbers they may be wanted, they can be supplied from the ranks of those who have retired from the active list, or who are for the time being on half-pay.

The presence of a body of naval officers in our colonies will form a valuable link with the United Kingdom. They will carry with them the spirit of discipline and devotion to their country which they have acquired from service in the navy, and they will help to keep alive its illustrious traditions in those young communities, in which it is so important to create a high tone of morality and conduct. The example of her great men is the most valuable inheritance of a nation, and in the career of many of our sea officers the highest moral excellence has been combined with dauntless bravery and skilful seamanship.

In considering a project for a Colonial Naval Reserve, it is

essential to determine to what extent the direct intervention of the Imperial Government will be required.

The Eastern Question once disposed of, it is my earnest hope that the attention of British statesmen may be directed rather to the object of drawing the colonies and the mother country more closely together than to continental affairs.

In our relations with other nationalities we excite jealousy by our prosperity. Although singularly unselfish and unaggressive, our country is not greatly loved abroad. On the other hand, Old England, as their mother country, still retains the warm affection of her colonies. Our Government may show a chilly indifference to their concerns, but England is still the "home" of all English-speaking people; and the identity of religion, history, laws, and literature unites together every member of the family by bonds more enduring than the protocols and treaties, however valuable they may be, which are negotiated with foreign nations.

The arguments in favour of a cordial co-operation of the United Kingdom with the colonies in measures of mutual self-defence have been repeated by several able writers in recent publications. I may specially refer to Captain Colomb, Sir Julius Vogel, and the author of a paper on "England and her Colonies," which appeared in *Fraser's Magazine*, in January. We are reminded of the value of the colonies to the mother country for the inevitable development of the British population, and as the main source of our maritime prosperity. While foreign countries are steadily determined to exclude British industries from the markets over which they exercise control, the value of the colonial trade becomes increasingly manifest; and, while we derive these advantages from our vast colonial connection, it is obvious that, in proportion to their own prosperity, the colonies are bound to take their share in defending the Empire. It is to be regretted that these obligations were not more strictly defined at the time when the privilege of self-government was conceded.

In conclusion, I revert once more to the importance of an inquiry by a Royal Commission as a necessary preliminary and preparative to the adoption of a complete and practicable scheme for the defence of the British Empire. The nature and

distribution of the forces required, whether consisting of *matériel* or *personnel*, whether naval or military, the amount of the expenditure which would be involved, and the fair appropriation of charges as between the mother country and the colonies, are questions which can only be determined after careful inquiry and deliberation on the spot, and with a fulness of knowledge, which can only be secured by the combined labours of a Royal Commission. We have but recently been relieved from the apprehensions of war. Public attention has been drawn to the importance of securing our commerce from interruption. If the Government can be induced to institute the proposed inquiry, they will render a service which will be appreciated both at home and on the furthest confines of the wide dominions of the Crown. Our fellow-countrymen, who have gone forth as the pioneers of civilisation, will pursue their arduous labours with more vigour, when they feel that their lives and property are protected under the shield of an united empire.

STEERING OF SCREW STEAMERS.

THE following is the Report of the Committee of the British Association, consisting of James R. Napier, F.R.S., Sir W. Thomson, F.R.S., W. Froude, F.R.S., J. T. Bottomley, and Osborne Reynolds, F.R.S., Sec., appointed to investigate the effect of propellers on the steering of vessels :—

“ Since the meeting of the British Association, held in Plymouth last year, this Committee has had the satisfaction of receiving reports of the trials of various English and foreign steamers, made by the owners and officers of the steamers, without any further instigation from the Committee than that contained in their circulars. These reports all show that those by whom the trials have been made have become convinced of the importance of the facts which they have observed. And, indeed, the mere fact of the trials having been undertaken shows that the importance of the

effect of the reversed screw on the steering while the ship is stopping herself is beginning to be recognised. This is further shown by the fact that one of the trials was undertaken at the instance of the Court of Mr. Stipendiary Yorke, in order to ascertain if the captain of the s.s. *Tabor* had been justified in starboarding his helm in order to bring his vessel round to starboard after his screw was reversed.

“All these trials, without a single exception, confirm the results obtained in the previous trials made by the Committee. But this is not the most important purpose which this year's trials serve. For as regards the general effect of the reversed screw on the action of the rudder, the trials already reported, particularly those of the *Hankow* (see last year's report), are conclusive and leave nothing to be desired. But the previous trials were all made with fast vessels at their full draught, their screws being well covered and the conditions of the weather being most favourable. The trials this year, on the other hand, appear for the most part to have been made with vessels in light trim, and in two instances the wind was blowing with considerable force. The result of these circumstances on the behaviour of the vessels is very decided and coincides remarkably with the effects deduced by Prof. Reynolds from his experiments on models (see Report, 1875, I., p. 145), viz., that when the screw is not deeply immersed and froths the water, it exerts, when reversed, considerable influence to turn the vessel independently of the rudder ; the vessel turning to starboard or port according as the screw is right or left-handed, which effect (and this seems to be the point most generally unknown) nearly disappears when the screw is so deeply immersed that it does not churn air into the water.

“Neither the Admiralty, the Board of Trade, nor the Elder Brethren of Trinity House have taken any further notice of the results communicated to them by the Committee.

“The Marine Board of South Shields has, however, taken considerable interest in the question, has invited captains to make trials, and Mr. J. Gillie, the Secretary, was present at the trial of the *Tabor*, ordered by the Court, and reported the results to the Committee.

“ There have been numerous collisions during the year, and in almost all cases the practice of reversing the screw has been adhered to. In many, if not in all instances where this has been done, the evidence goes to show that the vessel in which the screw was reversed did not turn in the direction in which those in charge of her were endeavouring to turn her. In two important cases this fact was fully apparent even to those in charge of the vessel. And in one instance the owners and captain of the vessel attributed the failure to steer to its true cause, namely, the reversal of the screw. Although in both cases those immediately in charge of the vessels contended that the rudder was not handled according to their directions.

“ The first case was that of the *Menelaus* and the pilot schooner on the Mersey. The *Menelaus* was in charge of a first-class pilot, and this steamer, in broad daylight, ran into and sank the pilot schooner, which was dropping up the river with the tide. The pilot in charge contended that owing to the wheel chains having got jammed his orders were not attended to. The jamming of the chains was denied by the owners; and the fact that they subpoenaed the Secretary of the Committee to give evidence at the trial may be taken to indicate the cause to which they attributed the collision.

“ The case, however, was only in part heard, for after the evidence for the plaintiffs a compromise was effected, and the pilots withdrew all assertion that the wheel chains had been jammed, thus admitting that the failure to steer had been brought about by the reversal of the screw.

“ The other case is the well-known accident to the *Kürfürst*. In this case it is admitted that the order was to starboard the helm and reverse the screw of the *König Wilhelm*, and this order was avowedly given with the view of bringing the vessel round to port. All the experiments of this Committee, however, go to prove that with a reversed screw and a starboard helm, such a vessel as the *König Wilhelm* would have turned to starboard rather than port. This was what, according to all the evidence, did actually happen, and was the final cause of the catastrophe. But it appears that those in charge of the *König*

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Wilhelm arrived at the conclusion that the men at the wheel (and these would be many), although they all aver that they heard the order and obeyed it, in reality turned the wheel the wrong way. Considering, therefore, that it was not one man but a number of men at the wheel, and that the vessel behaved exactly as she would have behaved had the order been obeyed, as the men say it was, the conclusion of the Court seems to be most improbable, and for the sake of future steering most unfortunate.

“ The Committee are now of opinion that the work for which they were originally brought together has been fully accomplished. The importance of the effect of the reversed screw on the action of the rudder has been fully established, as well as the nature of its effect completely ascertained. Also, for two years, the Committee have urged the results of their work upon the attention of the Admiralty and the various marine boards, and although they regret that, as yet, they have failed to obtain that general recognition of the facts brought to light, which their vital importance demands, they consider that this will surely follow, and that as a Committee they can do no more than publish the reports of the trials and the conclusions to which they have been led.

“ Full accounts of the experiments made previously to this year have been given in the two previous reports, and those which the Committee have received this year are given at length at the end of this report. The following is a summary of the conclusions which have been established, and it is interesting to notice that the conclusions drawn by Professor Reynolds, from experiments on models, have been fully confirmed by the experiments on full-sized ships.

“ Summary of the results of the trials of the effect of the reversed screw on the steering during the time a vessel is stopping herself.

“ It appears, both from the experiments made by the Committee and from other evidence, that the distance required by a screw steamer to bring herself to rest from full speed by the reversal of her screw is independent or nearly so of the power of the engines, but depends on the size and build of the ship, and generally lies between four and six times the ship's length. It is to be borne in

mind that it is to the behaviour of the ship during this interval that the following remarks apply :—

“The main point the Committee have had in view has been to ascertain how far the reversing of the screw, in order to stop a ship, did or did not interfere with the action of the rudder during the interval of stopping, and it is as regards this point that the most important light has been thrown on the question of handling ships. It is found an invariable rule that, during the interval in which a ship is stopping herself by the reversal of her screw, the rudder produces none of its usual effects to turn the ship, but that, under these circumstances, the effect of the rudder, such as it is, is to turn the ship in the opposite direction from that in which she would turn if the screw were going a-head. The magnitude of this reverse effect of the rudder is always feeble, and is different for different ships, and even for the same ship under different conditions of loading.

“It also appears from the trials that owing to the feeble influence of the rudder over the ship during the interval in which she is stopping, she is then at the mercy of any other influences that may act upon her. Thus the wind, which always exerts an influence to turn the stem (or forward end) of the ship into the wind, but which influence is usually well under control of the rudder, may, when the screw is reversed, become paramount, and cause the ship to turn in a direction the very opposite of that which is desired. Also, the reversed screw will exercise an influence, which increases as the ship's way is diminished, to turn the ship to starboard or port according as it is right or left-handed, this being particularly the case when the ships are in light draught.

“These several influences, the reversed effect of the rudder, the effect of the wind, and the action of the screw, will determine the course the ship takes during the interval of stopping. They may balance, in which case the ship will go straight on, or any one of the three may predominate, and determine the course of the ship.

“The utmost effect of these influences when they all act in conjunction, as when the screw is right-handed, the helm star-

boarded, and the wind on the starboard side, is small as compared with the influence of the rudder as it acts when the ship is steaming a-head. In no instance has a ship tried by the Committee been able to turn with the screw reversed on a circle of less than double the radius of that on which she would turn when steaming a-head. So that even if those in charge could govern the direction in which the ship will turn while stopping she turns but slowly, whereas, in point of fact, those in charge have little or no control over this direction, and unless they are exceptionally well acquainted with their ship, they will be unable even to predict the direction.

“ It is easy to see, therefore, that if on approaching danger the screw be reversed, all idea of turning the ship out of the way of the danger must be abandoned. She may turn a little, and those in charge may know in which direction she will turn, or may even, by using the rudder in an inverse manner, be able to influence this direction, but the amount of turning must be small and the direction very uncertain. The question, therefore, as to the advisability of reversing the screw is simply a question as to whether the danger may be better avoided by stopping or by turning. A ship cannot do both with any certainty.

“ Which of these two courses it is better to follow must depend on the particular circumstances of each particular case ; but the following considerations would appear to show that when the helm is under sufficient command there can seldom be any doubt.

“ A screw steamship when at full speed requires five lengths, more or less, in which to stop herself ; whereas, by using her rudder and steaming on at full speed a-head, she should be able to turn herself through a quadrant without having advanced five lengths in her original direction. That is to say, a ship can turn a circle of not greater radius than four lengths, more or less, so that even if running at full speed directly on to a straight coast, she should be able to save herself by steaming on a-head, and using her rudder after she is too near to save herself by stopping ; and any obliquity in the direction of approach, or any limit to the breadth of the object a-head is all to the advantage of turning, but not at all to the advantage of stopping.

“There is one consideration, however, with regard to the question of stopping or turning, which must, according to the present custom, often have weight, although there can be but one opinion as to the viciousness of this custom. This consideration is the utter inability of the officers in charge to make any rapid use of their rudder so long as their engines are kept on a-head. It is no uncommon thing for the largest ships to be steered by as few as two men. And the mere fact of the wheel being so arranged that two men have command of the rudder, renders so many turns of the wheel necessary to bring the rudder over, that even where ready help is at hand, it takes a long time to turn the wheel round and round, so as to put a large angle on the rudder.

“The result is, that it is often one or two minutes after the order is heard before there is any large angle on the rudder, and of course, under these circumstances, it is absurd to talk of making use of the turning qualities of a ship in case of emergency. The power available to turn the rudder should be proportional to the tonnage of the vessel, and there is no mechanical reason why the rudder of the largest vessel should not be brought hard-over in less than 15 seconds from the time the order is given. Had those in charge of steamships efficient control over their rudders, it is probable that much less would be heard of the reversing of the engines in cases of imminent danger.”

(The accounts of the various trials made are given at length at the end of the Report, but limited space forbids our republishing them.)

INSTRUCTIONS FOR SHIPMASTERS COMPARING BAROMETERS WITH THE SIGNAL SERVICE STANDARD AT THE MARITIME ASSOCIATION BUILDING IN NEW YORK.

War Department, Office of the Chief Signal Officer,

Washington, D.C., August 15, 1878.

THE upper surface of the mercury in the cistern of the large standard barometer is 11 feet and 6 inches above mean tide. The ship's barometer should be hung alongside, and at the same elevation. A table for reducing the barometric readings to 32° Fahrenheit (freezing) will be found at the barometer desk. To all readings of the large standard barometer allow for the reduction to freezing to obtain the true reading. The difference between this corrected reading and the reading of the ship's barometer, similarly reduced to freezing, will be the correction to be always applied (that is, to be added to or subtracted from) to the readings of the ship's barometer, in order to make sure that these readings are correct. To illustrate by an example, the reading of the standard barometer reduced to freezing is, say, 29.985, and the reading of the ship's barometer to be compared, reduced to freezing is, say, 29.970; in this case the standard is the higher, and the difference (.015) is to be added to all readings of the ship's barometer to obtain the standard reading. As another illustration, let the reading of the standard be as above, 29.985, and the reduced reading of the compared ship's barometer 30.01; in this case the standard is the lower, and the difference (.025) is to be subtracted from all readings of the ship's barometer to obtain the standard reading. The comparisons are similarly made, though not so closely, and the correction determined, though the ship's barometer may not be scaled to very close reading, or of thousandths. The correction for the instrumental error of each ship's barometer, as thus determined, must be applied whenever corrected readings are desired.

For all reports made to this office, if such are made by any

vessel, it will be sufficient to give, when a mercurial barometer is used, 1st, actual reading of barometer as read off; 2nd, correction for instrumental error determined as stated above; 3rd, reading of the attached thermometer; 4th, height (as near as possible) of barometer, as hung on shipboard above the sea-level. These ought to appear on each separate form or report sent to this office.

Aneroid barometers are compared with standard mercurial barometer by first reading the mercurial barometer and correcting this reading for temperature only—that is, reducing the reading to what it would be, if the temperature of the barometer was 32° Fahrenheit. Then read the aneroid and take the difference between the corrected reading of the mercurial and the actual (uncorrected) reading of the aneroid, which will be the correction to be applied to the aneroid; this correction to be added if the aneroid reads lower than the mercurial, and subtracted if it reads higher.

On all reports made for this office, when an aneroid barometer is used, the record should give, stated on the form, 1st, actual reading of the barometer as read off; 2nd, correction for instrumental error, determined as above; 3rd, reading of attached thermometer, if there is one, or of a thermometer in the room; 4th, whether the barometer is “compensated” or not; 5th, height (as nearly as possible) of the barometer, as hung on shipboard, above sea-level.

A sergeant or assistant of the Signal Service will be in attendance at the Maritime Association Building each day, from 12 to 1 p.m. to give any necessary information as to mode of making comparisons. The barometer case and the door of the screen will be opened at the hours named only, unless in instances of especial need, and always in the presence of the sergeant or assistant.

Shipmasters of all nations are invited to make use of the Signal Service standard for the purpose of comparing their ships' barometers. The Superintendent of the room of the Maritime Association will take charge of ships' barometers to be compared at any time they may be left with him for the purpose. They

will be duly delivered by him to the sergeant or assistant in charge of the standard. Ships' barometers can be most conveniently returned to owners at the hour between 12 m. and 1 p.m.

ALBERT J. MYER.

Brig. Gen. (Bvt. Assgd.), Chief Signal Officer, U.S.A.

CORRESPONDENCE.

FORM OF RUDDER.

To the Editor of the "Nautical Magazine."

SIR,—Permit me to suggest as the best means to prevent wrecks in narrow and intricate channels, and collisions between vessels at sea, that ships' rudders should be made hollow instead of in one solid piece, as is now the invariable practice. This is quite wrong; the rudder should be made hollow, that is, open at the top and bottom, so as to allow the water to flow freely up the submerged portion. The opening need not be more than one or two inches in width, and ten or twelve inches in length, according to the size of the rudder, the length of the column of water contained by it depending then, of course, on the depth to which the rudder may be immersed.

Those of your readers who may choose to make the experiment will find that in this way a vessel can be made far more handy and easy to control than, perhaps, by any other means.

I am, Sir, your obedient servant,

WM. H. DANIELS.

48, Windsor Road, Holloway, N.,
20th August, 1878.

STEEL WIRE ROPES.

To the Editor of the "Nautical Magazine."

SIR,—Allow us to make a few remarks concerning the use of steel wire. We are aware that several makers recommend these ropes for mooring and shifting purposes, but we have not as yet seen it put

into practice. We only saw them used as tow ropes and that only in cases requiring little or no handling of the hawsers. As far as we know there are two systems of employing steel wire ropes, viz., that of Messrs. Bullivant & Co., in London, where the reel and the nipper are entirely separated from one another, and that in which both are united in a handwinch provided with a common stopper.

According to our idea, both systems present the same difficulty, viz., that no cognisance is taken of the fact that most steamers now-a-days heave in their ropes with the steam-winches. To use the latter they might be provided with larger drums, which in the first place would entail a proportionate loss of power, and still would leave it a question if a few turns round such an enlarged drum would give sufficient friction to prevent the hawser from slipping—as it must be remembered that properly to preserve the steel wire, it must be kept greased.

Another objection is where to place the reel, which, in the case of steam-winches being used, only serves to coil and stow away the hawser, which however seems very necessary. We only refer to steamers not originally and specially arranged for steel wire ropes, as the deck arrangements of new ships could probably be modified to suit.

Having charge of the equipment of a line of steamers, we consider the use of steel wire for shifting hawsers very desirable, but these obstacles, and the fact that we have not yet seen any application of the steel wire for these purposes, make us doubt the advisability of using it on board of steamers where the hawsers are heaved in by steam; for these reasons we are of opinion that its use on board ships without steam-winches would, for the present, have more chance of success. We would, however, wish nothing better than to be convinced by facts that these objections are not of an insurmountable nature, and we would therefore conclude with the following question:—

Is there a steamship company whose mooring and shifting hawsers of St. Petersburg or Manila hemp have been entirely or partly replaced by steel wire, and, if so, what are the results?

We remain, your obedient servants,

X. and Y.

R

CONSULAR POWERS AT FOREIGN PORTS.

To the Editor of the "Nautical Magazine."

SIR,—Observing in your issue of August another article on Consular Naval Courts, I trust you will permit me to lay before you another instance of the working of that institution and the poor and scanty protection it affords us shipmasters, in the instance of this particular port frequented so largely by British shipping and so distant from home, far more serious than anything which may occur at Genoa.

I feel in duty bound to preface this my grievance, by stating that it is impossible for me to add anything to the already widely notorious opinion entertained by all the seafaring classes of Englishmen as to the high abilities, civility, and untiring patience and attention to business of our present Consul here, who has served in almost every clime for many years, and is by no means the square peg in the round hole. When he told me that it was no use trying my refractory second mate by a Naval Court here, for he had no means of carrying out the sentence except to touch the man's pocket—which was empty, the man being in debt to the ship—I am sure he spoke truth, and I ask, Sir, how it is that so great a country as England, has not proper Treaties to enable its Consular officers to carry out the Merchant Shipping Act framed so wisely by its legislators?

Here, it seems, the local law does not acknowledge the sentences of any foreign tribunal, except those of Sweden and Norway, and, while the consul is thus debarred from administering justice himself, the Danish authorities themselves refuse to prosecute unless the Consul will guarantee to pay the expenses of the prosecution, which we all know the meaning of in a country where the "almighty dollar" is the mainspring of everything, and where the simple arrest of a seaman by the police stands the ship in between £2 and £3 sterling.

When here last year in my vessel, I was present when the Consul's life was threatened by a refractory seaman for no reason but that the Consul sent for him to answer a charge of having stolen one of the ship's boats, and offered her for sale, and though

the would-be assassin was seized and secured, the authorities, to whom—bear in mind—the Consul is accredited in virtue of a Royal Exequatur, refused to prosecute, but informed the Consul that *he* might do so if he felt inclined to pay for it. On enquiry, it was found that from 500 to 1,000 dollars would be required, and the Consul very wisely abandoned his case, and had the mortification to see the man walk into his office, this time to ask to be assisted as a distressed British seaman, his vessel having sailed soon after the boat was recovered by the Consul's servants, and while the authorities were deliberating over the reply to be given to the Consul in regard to the prosecution.

If the Consul is thus dealt with himself, you may imagine the amount of justice we occasional visitors are able to obtain, and it occurs to me, and must occur to everyone, that the sooner Treaties are made to strengthen the hands of our Consuls to carry out the laws and instructions framed for their guidance, the better it will be for all, more especially for those who trade here regularly, among whom is, Sir,

Yours faithfully,

ANOTHER SUBSCRIBER.

St. Thomas, West Indies,

August 26, 1878.

BOOKS RECEIVED.

The Belgian Maritime Guide. By Burton Green. London: Simpkin, Marshall and Co. 1878.

THIS little work consists of a collection of information concerning the seaports and the customs of trade, &c., of Belgium. Each port is separately dealt with, and full particulars are given as to pilotage, docking, loading, surveys, ballast, &c., and also as to the numerous local dues levied on vessels trading to Belgian ports. Masters of such vessels will find this a handy and useful little volume.

Hints on Practical Navigation, with numerous Examples. By A. N. Somerscales, Navigation School, Dock Street, Hull.

THE object of this work is to put in a more practical form the navigation which is generally taught at schools, and asked for at examinations: as such it can be recommended, and will be found useful to persons when first called on to navigate a ship. But if the work goes to another edition, we should suggest the omission of the rule to find "longitude by chronometer at noon," as it is not even approximately correct—and is the only bad feature of the book. An erroneous method of finding a ship's position at sea should not even be suggested to a seaman, as he is always too ready to take up any slipshod method that has once been shown him, and that too without inquiry as to its accuracy.

Traité de Navigation: Deuxième Partie: Nouvelle Navigation Astronomique: Théorie par M. Yvon Villarceau; *Pratique* par M. Aved de Magnac. Paris, Gauthier-Villars.

IN 1776-7, one Samuel Dunn, a teacher of mathematics in London, published two works—a *New Variation Atlas*, and a *New Epitome of Practical Navigation*—dedicated to the honourable East India Company. In these works he introduced a problem which he entitled, "Of a general method whereby the latitude may be found, having any two altitudes of the sun, and the time elapsed between the observations." By assuming *two* latitudes differing about a degree or less—and not widely different from the latitude by dead reckoning—he shows that the two altitudes will give four hour-angles, two of which appertain to each assumed latitude. He then proceeds to make the following proportional statement:—"As the Difference of the Elapsed Times computed from the assumed Latitudes: is to the Difference of those Latitudes:: so is the Difference between the true Elapsed Time and either of the computed Elapsed Times: to a number of minutes which added to or subtracted from the correspondent assumed Latitude, as the case requires, gives the true Latitude required, when the Latitudes are assumed near enough for the truth."

Thus the problem went no farther than to the determination of the latitude. Chronometers were scarce articles in Dunn's day,

and the longitude had to be found by the method of lunar distances. We must not, however, forget to mention that this new resolution of the "double altitude" problem was discussed in all its bearings by Lalande in his *Astronomie*, Art. 3,992, and in his *Abrégé de Navigation*, p. 68. Still, we believe we are justified in stating that all that has appeared in English on the subject since Dunn's time has been done on his basis.

The problem was next introduced into Commander Thomas Lynn's *Horary Tables*, and subsequently (in 1833) published by him in a pamphlet under the title of—*Practical Methods by Trial and Error for finding the Latitude and Time at Sea by the observed Altitudes of the Sun, Moon and Stars, and the Elapsed Time between the Observations; originally submitted by Mr. Samuel Dunn*. Captain Sumner's work on the same subject—"To find a Ship's Position at Sea"—was first published in the United States in 1843.

This is not the place to discuss the merits and demerits of the problem in all its bearings, a task which we hope to undertake at an early date; suffice it to say, that the problem has begun to take considerable hold on nautical men, not only in England but abroad—Germans and Italians have written on the subject; and in France, the articles relating thereto which have appeared in the *Annales Hydrographiques* and in the *Revue Maritime et Coloniale* are as ably written as they are numerous.

The latest production which discusses the important problem of determining a ship's position at sea (on the basis of Sumner), is that of which the title heads this review. The work is a quarto volume, devoted entirely to the *New Method of Navigation*, in which the theory occupies 200 pages and the practice 215 pages, with plates, woodcuts, and tables. It is a good study for those of our readers who understand French, and the discussion of the problem will be found to be as able as could be desired; but where our authors err is when they claim *exactitude* for the method as proposed by them. *Theoretically*, the determination of a point whether on the ocean or on the land is one and the same problem, and the result equally accurate; but *in practice*, at sea, insuperable errors affect the quantities which serve to determine that point; and this too often when exactitude is most desirable. At best, the

new navigation will only give a surface or area of position ; and the question remains, whether it be not better to determine—it may be by calculation, or it may be by projection—the parallel on which the ship is, and then, if nearing the land, feel the way by the lead ; this is the old, and will continue to be the safe, navigation—at least, so long as errors of instruments are possible, and errors of observation cannot be checked.

Collisions afloat ; causes which lead to them. The terms Port and Starboard. What they mean. Ought they to be retained?
 Liverpool: Philip, Son and Nephew. 1878.

To prevent misunderstandings in the giving and taking of orders in regard to the steering of vessels, the author of this pamphlet “who has been for years in command of a mail steamer, carrying a large number of passengers,” proposes to take the bull by the horns, and to use the words “Right” and “Left” as either direction is required for the ship’s head, instead of the words “Port” or “Starboard” in reference to the direction required for the wheel or tiller. The author has a strong force of reason on his side which he demonstrates with some vigour and considerable intelligence. His pamphlet appears at an opportune moment, and his views may possibly receive something more than the fleeting attention of a casual reader. We think the pamphlet is really a useful contribution to a subject which has for some years been under discussion.

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool.

ENGLISH (APPLICATIONS).

8262. Henry Barron Rodway, Torquay. “Improvements in life-buoys.”

3878. John Isaac Thorneycroft, of the firm of John I. Thorneycroft & Co., Chiswick, Steam Yacht Builders. “A new or

improved method of removing water or moisture from the windows of conning towers, or other parts of vessels, and of locomotive driver's screens."

3374. John Isaac Thorneycroft, Chiswick. "Improvements in steering apparatus for vessels."

3385. Charles Gregory Wade, Wharfedale Hall, Warwick, Barrister. "Improvements in apparatus for facilitating the cleansing of ship's bottoms and other submerged structures."

3416. Walter James Griffiths, Bayswater. "Improvements in the form of the after part of the hulls of screw ships, and in the construction and arrangement of screw propellers."

3423. Rear-Admiral John Wallace Douglas McDonald, Bembridge, I.W. "Improvements in sheathing or covering sea-going vessels."

3425. Farnham Maxwell Lyte, of the Scientific Club, Savile Row, London. "An improvement in screw propellers."

3428. John Sacheverell Gisborne, 8, Craig's Court, London. "Improvements in ship telegraphs."

3430. Captain Frederick Pelham Warren, R.N., Southsea. "A ready means of saving life at sea in case of collision or wreck."

3497. John Isaac Thorneycroft, Chiswick. "Improvements in or connected with the steam generating apparatus of ships or vessels."

3530. Richard Richards, Manchester, Shipowner. "Improvements in vessels and appliances for raising sunken ships and other submerged bodies."

3540. Frederick Piercy, Pall Mall East, London. "Improved auxiliary steering apparatus for navigable vessels, applicable also as a brake for checking or stopping the motion of such vessels."

3541. John William Dennison, King Street, London. "Improvements applicable to screw steamships and other floating vessels."

3554. Alfred Fernandez Yarrow, Isle of Dogs, Poplar, Ship Builder. "Improvements in or connected with steamships or vessels and the machinery or apparatus employed therein."

3561. Horace Davenport, 26, Keppel Street, London. "Im-

provements in umbrellas, parasols, and like articles, whereby they are made buoyant and available for saving life on sea or river."

3585. Franklin Tocher, Peckham, Hatter. "A new arrangement and appliance for saving life from drowning."

3587. Edward Wyburd Furrell, King's Cross, London, and Robert Applegarth, Lombard Street, London, Engineers. "A new or improved method of enabling persons to float in water."

ENGLISH (ABRIDGEMENTS).

150. Edward Chesin, Sligo. "Improvements in raising submerged ships." This consists in dredging away the sand from the sides, and anchoring a light chain cable across the bows; this is drawn round the ship. A series of rings are carried by it at intervals, through which a rope draws strong steel wire pendants. One end of each pendant is buoyed at the surface over the gunwale, and the other carried to a distance and buoyed. One end of a stout rope is buoyed a-head, and passed several times round the ship and drawn tight. A number of coils of steel and wire rope are laid over the hemp rope. The pendant ropes being thus attached, the lifting power is applied in any suitable manner.

160. Thomas Bassnett, Liverpool. "Improvements in transmitting signals on board ship and in other situations, and in apparatus therefor." This consists in using a rigid connector (preferably of tubes) between the bridge and engine-room, instead of the chains now used to work the dials of the telegraphs; jointed bell cranks connected by right and left-hand couplings to the rods form the necessary connection for passing round corners.

171. Robert Hadfield, Sheffield. "Improvements in the manufacture of armour plates." This consists as follows:—A skeleton sheet with cross ribs is cast in steel. In the front of this are cast hollow pockets or indentations. This shell is annealed, and between the ribs on the back, slabs of chilled cast metal are cast, arranged to be flush with the rabbet previously made to receive a plate of wrought iron or cast steel. Blocks of wood fill up the pockets in the plate.

232. James Yates, Sheffield. "Improvements in the manufacture of armour for ships, forts, and other purposes." Plates are constructed by casting upon the surface of a foundation plate, steel shields or bosses, separated from each other by permanent or removeable loamed partitions, and faced or not faced by a front plate.

258. Thomas Hampton, Sheffield. "Improvements in the manufacture of armour plates." The plates are made of steel plates or sheets. These are piled and heated in a furnace and welded together. When the plate attains the desired dimensions, it is submitted to a case-hardening or re-carbonising process on part or over all its surface.

283. Robert Smyth, Dunning, N.B. "Improvements in the construction of screw propellers for ships or vessels, and in fittings connected therewith." This consists in forming the propelling parts of the screw at the extremity of the radial arms instead of near the boss as at present. The arms are merely broad enough to give strength to their junction with the boss. The blades are not more than one-half the depth or radius of the whole radius of the whole propeller, the radius of the eye or boss and the length of the arm making up the rest of the entire radius.

366. James Roger Thomson, of Glasgow, Engineer and Ship-builder, and John Parker, of the same place, Engineer. "Improvements in marine engines and in the arrangements of mechanism for governing the same." This consists in governing marine steam engines by the drawing or oscillation of the reversing links of their valve motions, through the combined action of their starting steam cylinder or engine and governor or regulator, which is made to control the action of the steam-valve of the latter and thus prevent racing. This is effected by making an ordinary governor control the differential steam-valve of the starting cylinder to move the links of the valve gear as described.

878. George Frederick Heyl, Charlottenburgh, Germany. "Improvements in compositions for protecting ships' bottoms and other submerged surfaces." This consists in compounding with such mixtures as tar or pitch, dissolved in alcohol, suitable oils, shellac, bichloride of mercury, arsenious acid and pigments, can-

tharides or nux vomica, or mixtures of the same to destroy marine growth.

475. Thorsten Nordenfelt, C.E., 1, St. Swithin's Lane, London. "Improved system of armour-plates for forts and ironclad ships." This consists in built-up armour as follows:—A soft plate is employed outside, behind this is a thin wood backing, behind this against a thick hard plate, behind this the usual wood backing, and then the iron skin of the ship, suitable bolts passing through all.

485. James Curtis, Middleton, Mo., and Charles Spencer Stewart, St. Louis, Mo., U.S. "Improvements in and connected with apparatus for propelling vessels, applicable also for other purposes." This consists in forming a sort of dry dock or chamber at each end of the vessel, two on each side of the bow, and two at the stern. A pair of propelling wheels revolve in each dry dock; they draw in the water and expel it through an opening in the chamber. By suitable doors and valves, the chamber can be closed and pumped out, and persons can enter to repair or paint the wheels, without the necessity of the vessel docking for the purpose.

501. John Thomson Stocks, Kirkcaldy, N.B. "An improved screw propeller." It is constructed with a quicker pitch of screw towards its central part than towards its circumference, the pitch gradually merging from the quick portion at the boss to the slower portion at the periphery. By this construction, the portions of the propeller at the boss strike the water at a less angle than those at the periphery, thus offering a greater resistance at the central portion, the object being to diminish "racing" in stormy weather.

518. Baptistin Carmagnolle, Marseilles, and Pierre Bonaventure Berlandier, 22, Buckingham Street, Strand. "Improvements in diving apparatus." This consists in constructing the diving dress of metallic portions connected together by articulated waterproof joints and secured by bolts in such manner that while preventing the entrance of water the wearer of the dress is allowed free movement of his limbs and body. The object of making the dress of armour is, that the diver's body shall not be exposed to the great pressure to which it is exposed in the present apparatus, and

also to allow a free circulation of air round it. The general details of this lengthy specification can only be understood by reference to the numerous drawings accompanying it.

AMERICA.

205053. Milton Chase, Harehill, Mass. "Screw-propellers." This is an improved screw-propeller wheel and it consists in a pair or number of pairs (usually the latter) of blades, the shanks of which pass through a slotted shaft and are secured together therein by suitable clamping pieces. By this means a broken blade can be easily taken out and a new one inserted.

206346. Wm. D. Moore, New York. "Water velocipede." This consists in mounting between two cigar-shaped vessels, suitably braced together, a couple of independent feathering paddle-wheels, which are worked by treadles by a person sitting in a raised seat in the centre of the boat.

206397. Marcus Marx, New York. "Life preservers." This relates to that class of flexible air-bag intended to be worn round the neck while in the water, and consists in a compressible tube extended into the bag and furnished with a rigid supply orifice having a screw valve. By this means the person can blow in air while floating, the pinching of the flexible tube by him, while inhaling air before again blowing, preventing the escape of the air in the bag. When filled enough, the screw-plug is turned and secured.

206551. Henry Exall, Richmond, Va. "Endless chain propellers." The propeller wheels are placed, four in number, two on each side of the boat; a chamber or open tunnel is formed at the bottom of the boat through which the chains pass. The floats of stiff metal are attached to rods forming the chain which are furnished with a hemisphere at each end screwed on to them, a double hemispherical shell enveloping the ends of each pair of rods and screwed hemispheres. This arrangement forms a universal joint or coupling, allowing the rods to move as easily as ordinary chains. The floats of the chain passing through the return chain box create a current of cool and fresh air which is used to ventilate the vessel.

208629. Carl Erick Swanson Gederén, Philadelphia. "Reefing and furling sails." This consists in attaching a revolving boom to the bottom of the square sails in such manner that when caused to revolve it winds up the sail. Drums are placed on the boom and caused to revolve by means of ropes passing over pulleys on the upper yard and thence to windlasses on deck to operate the reefing boom.

206682. John Edward Massey, Clerkenwell, London. "Ship's logs." This is the U.S. patent of the inventor's well-known logs, patented in England, and consists in various arrangements of the registering mechanism, intelligible only on referring to the drawings, and well known in this country, so needless to enlarge further.

206704. E. R. Clark and R. Hamilton, La Fayette, Ind. "Paddle-wheels." The radial paddle arms carry sliding rods which by means of slide blocks at their ends, and links, operate the floats. The sliding rods are worked by projections on them working in an eccentric flange, secured to the framework supporting the wheel. The arms are secured to suitable hubs on the wheel-shaft.

205751. J. E. Souett and Wm. B. Hoff, Washington. "Safety buoys." This consists in two watertight tanks stayed together and connected to a large shield, which serves to catch the wind to propel the buoy, and also to catch in the sand and anchor the buoy when drifted on the beach. A reel and line is carried by the buoy, and the line is automatically paid off from the reel through a watertight sleeve as the buoy drifts, the end of the line being retained aboard the ship for the purpose. By this means communication with the shore from a wrecked vessel can be established, as also the buoy can be sent to leeward in a breeze after a man fallen overboard.

FRANCE.

121980. Kelway and Thorne. "Improvements in apparatus for measuring the speed of vessels and the velocity of rivers or currents."

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
240	ENGLAND—East Coast—Yarmouth Sands —Hewett's Channel	Change in depth of water.
241	" West Coast—Bahama Bank Light-vessel	Intended alteration of light.
242	" South Coast—Seven Stones Light-vessel	Postponement of intended alteration of light.
243	SCOTLAND—East Coast—Peterhead	Temporary closing of south harbour.
244	IRELAND—South-east Coast—Saltees Light-vessel	Alteration of light and new syren fog-signal.
245	NETHERLANDS—Zuider Zee—Harlingen— Pollen Channel	Change in channel and temporary discontinuance of lights.
246	NORTH SEA—Eider River—Outer Eider Light-vessel	New fog-signal.
247	BALTIC ENTRANCE—Sound—Kronberg	Alteration of light.
248	" " Cape Stevns	New light.
249	SWEDEN—Grimskar and Sodra Udde	Proposed alteration of lights.
250	SPAIN—North Coast—Cape Higueras	Information about temporary light.
251	ADRIATIC—Klek Bay and Stagno-Piccolo Channel	Torpedoes, &c.
252	BLACK SEA—Yniada Road—Cape Kuri	Temporary light extinguished, new light established.
253	PERSIAN GULF	Reported sunken danger.
254	INDIAN OCEAN—Ceylon—Pedro Shoals	Discovery of a shoal.
255	CHINA SEA—Anamba Islands	Discovery of two rocks.
256	" Bashee Channel	Discovery of a rock.
257	JAPAN—Yezo Island—Cape Noyshap	New fog-signal.
258	AUSTRALIA—South Australia—Lacepede Bay—Kingston	Proposed light on new pier.
259	" " Port Moorowie	Sailing directions.
260	SOUTH PACIFIC—New Britain	Alterations in St. George Channel
261	" New Hebrides—Tanna Island —Port Resolution	Changes in depths and on the shores.
262	SOUTH AMERICA—West Coast—Iquique	Proposed new light.
263	WEST INDIES—Cuba	Characteristics of certain lights.
264	" Puerto Rico—Port Ponce	Shoal ground (Tasmanian Shoal).
265	UNITED STATES—Delaware Bay—Egg Island	Change in position of lighthouse.
266	" Massachusetts—Buzzard Bay —Hen and Chickens	New automatic signal-buoy.
267	" Lake Superior—St. Louis River	New light on North Pier.
268	" " Granite Island	New fog-bell.
269	" Lake Huron—Saginaw Bay	New light.
270	CANADA—Bay of Fundy—St. John Har- bour—Negro Point	New light, temporary light ex- tinguished.
271	" Nova Scotia—Halifax	New automatic signal-buoy.
272	" Gulf of St. Lawrence—Belle Isle Strait—Greenly Island	New light and fog-signal.
273	" Labrador—Belle Isle Strait— Amour Point	New fog-whistle.

NAUTICAL NOTICES.

240.—ENGLAND.—*East Coast.*—*Yarmouth Sands.*—*Hewett's Channel.*—An important change having taken place in the depth of water at the north end of Hewett's channel, it becomes necessary to alter the position of the St. Nicholas light-vessel, and also several of the buoys in that locality, as soon as possible. Further notice will be issued when the alterations have been effected.

241.—ENGLAND.—*West Coast.*—*St. George's Channel.*—*Bahama Bank Light.*—In or about the month of May next, the two fixed white lights at present shown from the Bahama bank light-vessel will be discontinued, and in lieu thereof one white revolving light will be shown, showing two flashes in quick succession every half minute, at an elevation of 38 feet above the level of the sea. Further notice will be given when the change is made.

242.—ENGLAND.—*South Coast.*—*Scilly Islands.*—*Seven Stones Light-Vessel.*—In reference to notice No. 290 in our volume for 1878, to the effect that in the course of the summer of the present year the character of the Seven Stones light would be changed from two fixed lights to one white revolving light, showing three flashes in quick succession, followed by an interval of 36 seconds of darkness, the whole revolution occupying one minute, owing to unforeseen circumstances, the alteration will not be made until the month of May, 1879. Further notice will be given when the change is effected.

243.—SCOTLAND.—*East Coast.*—*Peterhead.*—*Discontinuance of South Harbour Light, and Closing of South Harbour.*—On 16th September, 1878, and until further notice, Peterhead south harbour light will be discontinued, and the south harbour will be closed to shipping, pending harbour improvements.

244.—IRELAND.—*South-East Coast.*—*Alteration of Light at Saltees Light-Vessel.*—With reference to Notices in June and October, 1877, on the intended alteration in the character of the light exhibited from Saltees light-vessel, the light is now a flashing light showing three flashes in quick succession every minute, the time occupied by the three flashes being about twenty-three

seconds, the flashes being followed by an eclipse of about *thirty-seven seconds*. The light-vessel is distinguished in the day-time, by having one mast with a ball at the masthead—a jigger mast is attached. Also, a powerful siren trumpet *fog-signal* will henceforth be sounded during thick and foggy weather, giving a blast of five seconds, and, after an interval of twenty seconds, a second blast of five seconds' duration, and then an interval of $4\frac{1}{2}$ minutes before the next blast is sounded.

245.—NETHERLANDS.—*Zuider Zee*.—*Harlingen*.—*Temporary discontinuance of Leading Lights in Pollen Channel*.—In consequence of changes in Pollen channel, the leading lights at Harlingen (fixed *white* and fixed *red*) have been temporarily discontinued. The present channel is about 328 yards wide, and the depth at low water ordinary springs is $8\frac{1}{2}$ feet. *Variation*, $16\frac{1}{2}^{\circ}$ *W*.

246.—NORTH SEA.—*Eider River*.—*Fog-Signal at Outer Eider Light-Vessel*.—The fog-signal established at Outer Eider light-vessel is a siren trumpet, which, during thick or foggy weather, will give a blast of *five seconds'* duration every minute.

247.—BALTIC ENTRANCE.—*Sound*.—*Alteration of Light at Kronberg*.—On and after the 15th October, 1878, the present fixed light on the N.E. tower of the castle of Kronberg, at Elsinore, Denmark, will be altered to *fixed white*, showing a *flash* of five seconds' duration every half minute; visible 15 miles.

248.—BALTIC ENTRANCE.—*Sound*.—*Alteration of Light at Cape Stevns*.—A new lighthouse has been erected on Cape Stevns (Stevns Klint), Denmark. On and after the 15th October, 1878, it will show a *white revolving light* with a *flash* of 13 seconds' duration every half minute; elevation above the sea 209 feet, and visible 20 miles. The tower, of stone, is white, and 72 feet high.

249.—SWEDEN.—*Proposed Alteration of Lights*.—*Caution*.—It is proposed at an early date (October or November) to make an alteration in the lights of Grimskar and Sodra-Udde.

250.—SPAIN.—*North Coast*.—*Cape Higuera*.—The temporary light from the ruin of the old lighthouse, on Cape Higuera, west point of Fuenterrabia bay is not shown from 1st May to 1st November.

251.—ADRIATIC.—*East Coast*.—*Torpedoes in Klek Bay and*

Stagno-Piccolo Channel.—In consequence of torpedoes having been laid down, Klek bay and Stagno-Piccolo channel are closed to navigation, subject to the following regulations :—Any vessel obliged to enter Stagno-Piccolo channel, must be piloted by an official of the torpedo staff; but during the night the navigation of this channel is absolutely prohibited.

252.—BLACK SEA.—*Yniada Road*.—*Light on Cape Kuri*.—With reference to previous notice respecting the temporary exhibition of a fixed light on Cape Kuri, pending the restoration of an apparatus that should show a fixed and flashing light, it has since been notified that on 17th August, 1878, there would be re-exhibited a *fixed* light varied by *flashes* every *two minutes*, and visible 15 miles.

253.—PERSIAN GULF.—*Reported Sunken Danger*.—The following information relates to the existence of a sunken danger in the fairway of the Persian gulf, said to be situated about midway between Rús-al-Mutáf and Rennie shoal. This danger (*Oribe shoal*) was reported by the master of the British barque *Oribe*, in 1878, but the depth on the shoal is not given, nor have any details been received as to the manner in which the position was determined. Position as given, lat. 27° 27' N., long. 50° 59' E.

Note.—As this shoal lies in the direct track of vessels proceeding up or down the Persian gulf, mariners should navigate in the locality with great care.

254.—INDIAN OCEAN.—*Ceylon*.—*North Coast*.—*Pedro Shoals*.—*Ethiopia Shoal*, on which the steam vessel *Ethiopia* recently touched, has a depth of 12 feet, and lies on the west side of one of the Pedro shoals, where a depth of 5 fathoms was formerly supposed to be the least water. From the shoal, point Pedro bears N.W., distant $12\frac{1}{2}$ miles, and Kudaripu S. 77° W., $8\frac{1}{2}$ miles.

255.—CHINA SEA.—*Rocks near Anamba Islands*.—Two small rocks have been discovered lying about 4 miles N.W. by W. from the north point of the Little Telega island, Anamba islands. These rocks (*Nicado rocks*) are 5 feet above high water, and were seen by the master of the Italian barque *Nicado*. From the position as given, namely, lat. 8° 9' N., long. 105° 50' E., the east point of Djimaja island bears S. $\frac{1}{2}$ W., distant $10\frac{1}{2}$ miles. *Variation*, $1\frac{1}{2}$ ° E.

256. —CHINA SEA.—*Sunken Danger in Bashee Channel.*—The sunken danger (*Forest Belle* rock) in the Bashee channel, on which the American barque *Forest Belle* struck, lies S. 10° W., distant $6\frac{1}{2}$ miles from Little Botel Tobago island. Position, lat. $21^{\circ} 51' N.$, long. $121^{\circ} 34' 25'' E.$ Variation, $0\frac{1}{4}^{\circ} W.$

257. —JAPAN.—*Yezo Island.*—*Fog-Signal at Cape Noyshap.*—A fog-signal has been established at Cape Noyshap lighthouse, on the eastern extreme of Yezo island. It is a bell worked by machinery, which, during thick or foggy weather and snow storms, will be sounded *twelve times every minute.* This signal will be sounded from 1st April to 15th December, the period during which cape Noyshap light is exhibited. Position as given, lat. $43^{\circ} 23' N.$, long. $145^{\circ} 46' E.$

258. —AUSTRALIA.—*South Australia.*—*Proposed Light at Kingston, Lacepede Bay.*—On the completion of the screw pile pier which is in course of construction at Kingston, Lacepede bay, a *fixed white* light will be exhibited therefrom. Further particulars will be given in due course.

259. —AUSTRALIA.—*South Australia.*—*Sailing Directions for Port Moorowie.*—Moorowie is a coaster's port, immediately to the eastward of point Gilbert, in Sturt bay, on the north side of Investigator strait. The anchorage is a round hole, 2 cables in diameter, with 12 to 21 feet water, to get into which a bar has to be crossed with 8 feet over it. As a general rule, the port is not available for vessels drawing more than 10 feet. Point Gilbert has some rush-covered sandhills, 60 feet high, on its western part. Rocks, awash and with less than 1 fathom over them, stretch 3 cables to the southward of the point, and half a mile south from it there are 5 fathoms. A stony bank, which dries at half-tide, lies $2\frac{1}{2}$ cables to the eastward of point Gilbert; and E. by N., 2 cables from the centre of this bank, a black buoy marks the extreme of the one-fathom line to the eastward of the point. E. $\frac{1}{4}$ N., four-fifths of a cable from the black buoy, a chequered buoy marks a rocky bank, with 5 to 6 feet water, extending three-quarters of a cable east and west, and half a cable north and south. The buoy lies on the N.W. part of the bank. From point Gilbert the coast bights to the N.E. (a rocky bank 20 to 40 feet high, fronted by

sand and stones) for 1 mile to a point above which are some bare and rush-covered sandhills, the highest of which is 65 feet. A reef, awash at low-water, extends 2 cables S.S.W. from this point, and there are no more than 6 feet water, S.W. $\frac{1}{2}$ S. $4\frac{1}{2}$ cables from it, where a red buoy marks the eastern side of the entrance to the port. The chequered buoy bears W. by N. $\frac{1}{2}$ N., $1\frac{1}{2}$ cables from the red buoy.

Tides.—It is high water, full and change, in Port Moorowie at 3h. 10m., springs rise 6 feet. The tidal stream is scarcely felt inside the port; outside, in 10 fathoms, the flood sets to the eastwards and ebb to the westward, following the direction of the coastline at a rate of $1\frac{1}{2}$ knots at springs.

Directions and Anchorage.—Point Gilbert should be kept to the northward of N.W. by W. until the red buoy bears east of north; then steer in between the red and chequered buoys, passing half a cable to the westward of the former; or bring the post office (the highest limestone house) to bear N. by W., steer for it on that bearing, and anchor $1\frac{1}{2}$ cables N.N.W. from the red buoy, with the high-water extreme of Point Gilbert bearing W. by S. $\frac{1}{2}$ S., in 20 feet sand and weed, the holding ground being very good. From the westward, keep more than half a mile off Point Gilbert, until the post office bears N. by W., then proceed as before. In going in, a vessel will pass over 8 to 9 feet, some distance outside the buoys. If obliged to wait outside for high water, anchor in 30 feet, with Point Gilbert hill bearing N.W., and the rush-covered hill east of the township, N.E. by N.

260.—SOUTH PACIFIC OCEAN.—*New Britain.* — *St. George Channel.*—Recent volcanic eruptions have resulted in obstructions to navigation in St. George channel (between New Britain and New Ireland). In the month of February last three craters formed at the foot of Mother and Daughter mountains, on the east side of Blanche bay, north-east coast of New Britain. On the 10th February a tidal wave swept Blanche bay, and soon afterwards an island about three-quarters of a mile in diameter rose from the sea to a height of seventy feet; this island lies southward of Matupi or Henderson island, in the entrance of the bay. The German steam vessel *Pacific* experienced difficulty in pro-

ceeding through St. George channel a few days after the eruption, as fields of pumice stone covered the surface of the sea. Caution is therefore necessary in navigating St. George channel. The passage between Duke of York island and Blanche bay had been closed by a compact field of pumice stone five feet in thickness.

261.—SOUTH PACIFIC OCEAN.—*New Hebrides.—Tanna Island.—Changes in the Depths and on the Shores of Port Resolution.*—Two earthquakes have recently taken place at port Resolution, one on the 10th January, and the second on the 11th February, 1878. Previous to the outbreaks the winds had been strong and variable, and the weather hot, with rain; the volcano on the west side of the port throwing up huge rocks. Within the recollection of the natives, no earthquake had occurred before. At the first earthquake a new volcano burst out close to Sulphur bay, between the bay and the old volcano. A wave about 50 feet high rose and swept the east point of the harbour and destroyed the native plantations; vast numbers of fish were left by the receding tide in the bush. The bed or bottom of the harbour at the west side rose above the water for about 100 yards in length. At the second earthquake the bottom was again upheaved for another 50 fathoms, making the entrance of the harbour very narrow. Across the harbour, a little inside the entrance, there is now a bar with only 15 feet water, where formerly there was a depth of 5 or $5\frac{1}{2}$ fathoms. In some places near the shore the bottom has been raised 20 feet, or even more, above the water. The whole harbour is now so contracted by the upheaval that it is doubtful if a large vessel could find room to swing in it. At about a cable seaward from the west point of the entrance three rocks have been thrown up in a position where formerly there was 11 fathoms water. A high hill near the rock named Cook's pyramid, on the west side of the entrance, fell into the sea, and has made a new point of land; and Cook's pyramid has been raised about 40 feet. A patch of discoloured water, about a cable in extent, probably a shoal formed by the earthquakes, has since been seen about 2 miles north of the port. On the west side of the island the shock was scarcely felt, and there was no tidal wave.

262.—SOUTH AMERICA.—*West Coast—Iquique Road.—Light on*

Iquique Island.—It is intended to exhibit a light from a lighthouse now in course of construction on Iquique island, Iquique road. It will be a *fixed* and *flashing* light, showing a flash every *thirty seconds*, and will be visible through an arc of 180° from a distance of 18 miles. The lighthouse 72 feet high, is being constructed of iron. Position as given, lat. $20^{\circ} 12' 30''$ S., long. $70^{\circ} 11' 20''$ W.

268.—WEST INDIES.—*Cuba*.—*Characteristics of certain Lights*.—Information has been received of the following characteristics of certain lights on the island of Cuba:—*Cape Cruz light* (fixed and flashing); the flash from this light is *red*. *Port Xagua or Cienfuegos light* (fixed and flashing); the white flashes from this light occur at intervals of *two minutes*. *Havana light*; Morro castle light is a *revolving white* light, attaining its greatest brilliancy every *thirty seconds*. *Cardenas bay, Piedras cay light*; the *red* flash of this light occurs every two minutes. *Bahia de Cadiz light* is a *revolving white* light, attaining its greatest brilliancy every *minute*. *Nueritas harbour, Maternillos light* is a *fixed and flashing* light, showing a *white* flash every *minute*.

264.—WEST INDIES.—*Puerto Rico Island*.—*Shoal Ground in the Approach to Port Ponce*.—*Tasmanian shoal*, on which the Royal mail steam vessel *Tasmanian* recently grounded, has $3\frac{1}{2}$ to 5 fathoms water over it; this shoal ground is nearly circular with a diameter of about 3 cables. From the shoalest part, situated about a mile S.S.E. $\frac{1}{2}$ E. from Cardones island, the centre of Rattones island is in line with a remarkable fall in the hills bearing W. by N. $\frac{1}{8}$ N., and a conspicuous clump of trees on the middle (the second) range of hills behind the town is in line with the east extreme of Ponce village N. by E. The conspicuous clump of trees in line with the house of the captain of the port (the house next west of the custom house) bearing N. by E. $\frac{1}{4}$ E. leads westward of the shoal. The saddle hill, nearly on the same line of bearing, and given as a leading mark on the chart, is not easily distinguishable. Eastward of Tasmanian shoal, a quarter of a mile distant, is another patch of shoal ground; this is about 2 cables in diameter, with $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms water on it. There is a depth of $6\frac{1}{2}$ fathoms between the two shoals. *Variation*, 1° E.

265.—UNITED STATES.—*Delaware Bay*.—*Change in Position of*

Egg Island Lighthouse.—The Egg island lighthouse, Delaware bay, is now being removed to a point about one-sixth of a mile N.E. by N. of its present position. The light will not be extinguished during its removal.

266.—UNITED STATES.—*Massachusetts.*—*Signal-Buoy near Hen and Chickens Lightship.*—*Buzzard's Bay.*—An automatic signal-buoy, painted black, and giving blasts of a whistle at short intervals, has been moored one mile southward of the Hen and Chickens lightship, in $7\frac{1}{2}$ fathoms low water.

267.—UNITED STATES.—*Light on North Pier, Mouth of St. Louis River, Lake Superior, Minnesota.*—On and after September 1, 1878, a *fixed white* light will be shown from an open frame-work tower, recently erected on the easterly end of the north pier at the mouth of St. Louis river, Lake Superior, Minnesota. Approximate position, lat. $46^{\circ} 42' 35''$ N., long. $92^{\circ} 1' 21''$ W. The main light on Minnesota point will be discontinued.

268.—UNITED STATES.—*Fog-Bell on Granite Island, Lake Superior, Michigan.*—A fog-bell has been erected on Granite island, Lake Superior, Michigan, which will be sounded during thick and foggy weather.

269.—UNITED STATES.—*Light on Port Austin Reef.*—*Entrance to Saginaw Bay, Lake Huron, Michigan.*—On and after September 15, 1878, a light will be shown from the lighthouse recently erected on Port Austin reef, entrance to Saginaw Bay, Lake Huron, Michigan. It will be a *fixed white* for one minute, followed by five consecutive *red flashes* of 12 seconds each. The structure is an open frame-work tower on a crib, about $1\frac{1}{2}$ miles from the mainland, and within about 500 feet of the end of the reef which makes out from Old Point Aux Barques, entrance to Saginaw Bay, Lake Huron, Michigan. Approximate position, lat. $44^{\circ} 5' N.$, long. $82^{\circ} 57' W.$

270.—CANADA.—*Bay of Fundy.*—*St. John Harbour.*—*Light at Negro Point.*—With reference to previous notice, a light will be exhibited from a lighthouse constructed on the breakwater extending from Negro point, west side of entrance to St. John harbour. The light is a *fixed red* light, elevated 36 feet above high water, and should be visible in clear weather from a distance of 8 miles. The light tower is a wooden frame building 35 feet high, painted

white, and situated 50 feet within the extreme of the breakwater. Position as given, lat. $45^{\circ} 14' 25''$ N., long. $66^{\circ} 4' W.$

Note.—On the exhibition of this light, the temporary light shown from the same spot will be discontinued.

271.—CANADA.—*Nova Scotia.*—*Automatic Signal Buoy at Halifax.*—About the middle of August, 1878, an automatic signal buoy, painted *black*, would be moored at the entrance to Halifax harbour, in about 38 fathoms water. The buoy will be placed about 6 miles south-eastwardly of the inner automatic buoy, now moored off Portuguese shoal. Further particulars will be given when the buoy is moored.

272.—CANADA.—*Gulf of St. Lawrence.*—*Strait of Belle Isle.*—*Light and Fog-Signal at Greenly Island.*—A light is now exhibited from a lighthouse recently erected on the south-west part of Greenly island, strait of Belle Isle. It is a *revolving* light, showing *white* for *half a minute*; *red* for *half a minute*; and again *white* for *half a minute*; the light being then eclipsed for *one and a half minutes*, the revolution thus occupying *three minutes*. The light is elevated 100 feet above high water, and is visible 15 miles. The lighthouse, 78 feet high, is octagonal, built of wood, and painted fawn colour, with keeper's dwelling attached. Position, lat. $51^{\circ} 22' 35''$ N., long. $57^{\circ} 10' 50''$ W.

Note.—A gun will be fired every *half hour* during thick or foggy weather and snow storms, while the navigation is open.

273.—CANADA.—*Labrador.*—*Straits of Belle Isle.*—*Fog-Whistle on Amour Point.*—A fog-whistle has been erected near the light-house at Amour point, Forteau bay, Straits of Belle Isle, Labrador, in lat. $51^{\circ} 27' 35''$ N., long. $56^{\circ} 50' 55''$ W. It will give blasts of 10 seconds' duration in each minute, with an interval of 50 seconds between each blast during thick weather, fogs, and snow storms.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY, 1878.

No. 24.—CHINA SEA DIRECTORY, Vol. IV., Notice 7; information relating to portions of East Coast of Nippon, and S.W. Coast of Kiu-siu, Japan.

- No. 25.—BAY OF BENGAL.—Remarks on various harbours, coasts, &c.
- No. 26.—AFRICAN PILOT, South and East Coasts, Notice 15; information relating to Bassas da India Reef, and to Europa Island, also to search for Pilot Shoal, Mozambique Channel.
- No. 27.—WEST INDIA PILOT, Vol. II., Notice 4, Puerto Rico Island, shoal ground in the approach to Port Ponce.
- No. 28.—SOUTH PACIFIC OCEAN, Notice 42, New Hebrides, Tanna Island, Port Resolution; changes in depths and shores caused by earthquakes.
- No. 29.—SOUTH PACIFIC OCEAN, Notice 48, New Britain, St. George Channel; obstructions to navigation caused by volcanic eruptions.

CHARTS PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN MAY, JUNE, JULY AND AUGUST, 1878.

1692	Mediterranean :—Anchorages on the coast of Morocco — Zafarin islands, Mazari bay, and Melilla, with views	...	...	...	1	0
390	Newfoundland :—Pistolet bay	...	...	...	1	6
460	Red sea :—Musawwa' harbour	...	...	...	1	0
810	Gulf of Finland :—Hango road and approaches, with plan of Gangestad harbour	...	...	...	1	6
755	Bay of Bengal :—False point anchorage, and entrances of the Bacood creek and Jumboo and Mahanuddy rivers...	...	...	...	1	6
532	Japan :—Simonoseki strait, with view	...	...	...	2	6
1411	England, west coast, sheet 5 :—New Quay to Holyhead, with views	...	...	...	2	6
2666	North America, gulf of St. Lawrence :—St. John's (Newfoundland) to Halifax (Nova Scotia), with the outer banks	...	...	...	2	6
817	China, east coast :—The narrows of Hai-tan strait	...	...	...	2	6
790	Denmark, east coast :—Approaches to Copenhagen with Drogden and Flint channels (<i>Preliminary chart</i>)	...	...	...	2	6

- 801 North American lakes :—Lake Michigan, with plan of Chicago 2 6
- 2551 Scotland, west coast :—Isle of Skye northward of Loch Ainneart and Sleat sound, with adjacent sounds and lochs to the eastward 2 6
- 167 Fiji islands :—Kandavu island and passage ... 2 6
- 807 Australia, east coast :—Approaches to Broad sound, with views 2 0
- 1488 England, west coast :—St. Anns head to St. Brides bay, including the Smalls, Grassholm, and adjacent islands, with plan of Jack sound ... 2 6
- 513 A plan of Orangestadt harbour has been added.
- 1484 A plan of Trieste harbour has been added.
- 184 A new plan of Na-ora-matua anchorage has been added.
- 1282 New plans of Quintai road, Rapel river, and Matanza anchorage have been added.
- 1084 Australia, south-west coast :—Cape Naturaliste to King George sound and Doubtful island bay ... 2 6
- 109 England, east coast :—Humber river, entrance to, with plans of Kingston and Grimsby, and views 2 6
- 718 Islands off the north coast of Madagascar :—Farquhar or Joao de Nova islands, with plan of entrance to Inner harbour, and plan of Assumption island 0 6
- 1059 Australia, south coast :—East Mount Barren, near Doubtful island bay, to Cape Pasley, including the archipelago of the Recherche, with view ... 2 0
- 808 Australia, east coast :—Approaches to Shoalwater bay, with views 2 0
- 124 North sea :—Texel 1 6
- 208 Japan :—Harbours and anchorages on east coast of Nipon 1 6
- 814 Bay of Bengal :—The Sandheads, False point to Mutlah river 2 6
- 1468 Adriatic sea :—Ports and anchorages in Dalmatia and Albania—Port Molonta to Malaluka bay,

- showing approaches to Cattaro; Little Port
 Molonta; Antivari roads; ports St. Giovanni di
 Medua and Budua; and Durazzo bay; with view 1 6
- 847 Cyprus island:—Famagousta 1 6
- 848 ————— Larnaka 1 6
- 846 ————— Limasol 1 6
- 811 China, east coast:—Anchorages between Black head
 and Crab point, including Blakeney pass, Cupchi
 point and Breaker point anchorages 1 6
- 2372 A plan of Windau has been added.
- 1582 Plans of Kalamota channel and ports Gravosa and Malfi
 have been removed, and plans of approaches to Stagno-
 piccolo and Klek bay, port Tolero, and Narenta anchorage
 have been added.
- 459 A new plan of Dry harbour has been added.
- 2398 A new plan of Pembroke reach has been added.

 OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1878.

(*This List is completed to the 18th of each Month.*)

Wallachia, s.s.; iron; built at West Hartlepool, 1871; owned by Mr. Henry Taylor and others, of Liverpool; tonnage, 458; Ibrail to Safi, Coast of Marocco; grain; grounded on a rock and abandoned near Argamor Point, July 12, 1878. Inquiry held at Liverpool, August 14, 1878, before Mansfield, Stip. Mag., Grant and Wilson, N.A. Master acted with some imprudence in taking his vessel too near the land, but the Court found that she was not prematurely abandoned. Certificate returned.

295. *G. A. Pyke* and *Adriatic*, s.s.; the former a brigantine of 159 tons, from Gravesend, bound to Dublin with a cargo of cement; the latter an iron vessel of 2,458 tons, belonging to the Oceanic Steam Navigation Company, on a voyage from Liverpool to America; in collision off the Tuskar, when the brigantine was sunk and five of her crew were drowned, July 19, 1878.

Inquiry held at Liverpool, August 19, 1878, before Rothery, Wreck Commissioner, Grant and Castle, N.A. Casualty due to the great speed at which the steamer was running at the time. Court was of opinion that the master of the steamer was in default for not taking measures to ascertain the speed of the vessel, for having supposed her to be going from five to six knots, when, in fact, she was going nearly ten, but looking at the careful attention he otherwise paid to the navigation of his vessel his certificate was returned, with a warning to be more careful in future. Third and fourth officers guilty of carelessness in heaving the log ; also received a warning.

299. *Humboldt*, s.s. ; iron ; owned by Liverpool, Brazil, and River Plate Navigation Company ; tonnage, 994 ; Liverpool to Brazil ; coals and passengers ; explosion took place in the engine-room in the River Mersey, July 27, 1878, by which three lives were lost. Inquiry held at Liverpool, August 16, 1878, before Rothery, Wreck Commissioner, Ravenhill and Castle, N.A. Accident occasioned by the giving way of the lower after plate of the flue of the after superheaters, the fracture of the plate due to its being eaten away by corrosion.

300. *Eunice*, s.s. ; iron ; built at Sunderland, 1872 ; owned by Mr. T. C. Stamp, of that port ; tonnage, 481 ; Shields to Rouen ; coals ; stranded near Sunderland, July 31, 1878. Inquiry held at South Shields, August 26, 1878, before Stevenson, Dep. Stip. Mag., Holt and Beasley, N.A. Master guilty of negligent navigation. Certificate suspended for three months.

OFFICIAL INQUIRIES ABROAD.

Duke, barque ; grounded at Chandbally, mouth of Dhamra River, in March, 1878. Inquiry held at Chandbally, May 16, 1878. Master in default. Certificate suspended for nine months.

Ann Gambles, barque ; lost at Tewaiwais Point, Bluff Harbour, New Zealand, May 16, 1878. Inquiry held at Southland, N.Z., May 27, 1878. Master in default for not waiting until morning before attempting to enter the harbour. Certificate suspended for six months.

Schnapper and *Clarence*, steamships; collided in the Brisbane River, May 18, 1878. Inquiry held at Brisbane, May 21, 1878. Casualty due to an error of judgment in allowing the *Schnapper* to enter the cutting on the wrong side of the channel whilst another steamer was passing down.

Rob Roy, schooner; of Sydney; wrecked at the mouth of the Clarence River by reason of the tow rope parting. Inquiry held at Sydney, June 11, 1878. No charge made against the master.

Laura, ketch; Sydney; abandoned and lost outside Camden Haven. Inquiry held at Sydney, June 24, 1878. No charge made against the master.

Douglas, schooner; Melbourne; wrecked at Stewart Island. Inquiry held at Sydney, June 26, 1878. No charge made against the master.

Blackbird, s.s.; lost on Clonmel Island, June 2, 1878. Inquiry held June 27, 1878. Master and mate in default. Certificate suspended for twelve months. Mate's certificate suspended for three months.

Royal Dane; foundered near the Port of San Carlos, Chili, June 15, 1878. Naval Court held at Valparaiso, June 28, 1878. Master exonerated from blame.

Joshua, barque; wrecked at Beyapore, June 16, 1878. Inquiry held at Malabar, July 3, 1878. Casualty due to cable parting. Master and crew exonerated from blame.

Pacific, barque; of Shields; abandoned at sea, June 23, 1878. Naval Court held at Valparaiso, July 3, 1878. Master justified in abandoning the vessel. Certificate returned.

Cambrian, ship; St. John's, N.B.; abandoned May 24, 1878. Naval Court held at Valparaiso, July 4, 1878. Master justified in abandoning the vessel when he did.

Palestina, barque; lost on the bar to the north of Crossing Rocks, Abaco, July 11, 1878. Inquiry held at Nassau, July 18, 1878. Master and four hands drowned; no decision was therefore come to as to the cause of the disaster.

THE SHIPMASTERS' SOCIETY.

IN pursuance of the intention expressed some little time since to hold monthly meetings of the members of this Society for the discussion of nautical subjects, such a meeting was held on the 27th August last, at Jeffrey's Square, when Captain W. Burrows read a Paper upon the Evidence given before the Select Committee of the House of Commons on the Merchant Seamen Bill, 1878. Captain Burrows's paper was characterised by considerable vigour of the genuine "old salt" type, and was warmly received by the assembled members. His chief points were, opposition to anything like a penal obligation being put on masters of sailing vessels to keep a good look-out at all times, and opposition to giving a master less power over the seaman than he now has. Captain Burrows's concluding remarks may not be without interest to some of our readers, and benefit to the Society:—

"And now, gentlemen, I have finished; and will only say that my object in reading this paper to-day is, that I am anxious to see this Society a success, that these meetings once a month may be made profitable to shipmasters, that we may have these rooms better attended month by month, and our members increasing, and that this precious Bill may be sent to Coventry, and that shipmasters may see the necessity of looking after their own interests; for I am quite sure that if they do not nobody else will, and in my opinion there is no better way to do this than for all masters to join this or one of the kindred societies. Forty thousand certificated masters ought to have some say in the matter of making laws to govern the shipping of this country. Then combine; let it be no longer said, and said as a reproach, that shipmasters never did, nor never will, hang together."

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THE SHIPMASTERS' SOCIETY.

IN pursuance of the intention expressed some little time since to hold monthly meetings of the members of this Society for the discussion of nautical subjects, such a meeting was held on the 27th August last, at Jeffrey's Square, when Captain W. Burrows read a Paper upon the Evidence given before the Select Committee of the House of Commons on the Merchant Seamen Bill, 1878. Captain Burrows's paper was characterised by considerable vigour of the genuine "old salt" type, and was warmly received by the assembled members. His chief points were, opposition to anything like a penal obligation being put on masters of sailing vessels to keep a good look-out at all times, and opposition to giving a master less power over the seaman than he now has. Captain Burrows's concluding remarks may not be without interest to some of our readers, and benefit to the Society:—

"And now, gentlemen, I have finished; and will only say that my object in reading this paper to-day is, that I am anxious to see this Society a success, that these meetings once a month may be made profitable to shipmasters, that we may have these rooms better attended month by month, and our members increasing, and that this precious Bill may be sent to Coventry, and that shipmasters may see the necessity of looking after their own interests; for I am quite sure that if they do not nobody else will, and in my opinion there is no better way to do this than for all masters to join this or one of the kindred societies. Forty thousand certificated masters ought to have some say in the matter of making laws to govern the shipping of this country. Then combine; let it be no longer said, and said as a reproach, that shipmasters never did, nor never will, hang together."


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STEEL FOR SHIPBUILDING.

ECENT advances in the substitution of a new material for the puddled iron hitherto used almost exclusively for shipbuilding purposes, have caused a considerable interest to be taken in this year's meetings of the *Iron and Steel Institute* as has been shown by the large attendance of naval architects and marine engineers. The reduction of twenty per cent. in the scantlings allowed by Lloyd's when ingot iron, or as it is usually called *mild steel*, is used in place of ordinary iron, has induced some shipowners to adopt the new material, chiefly however for vessels built for special trades, where there is a certain and considerable gain from reduced weight of hull. Such is obviously the case where vessels are employed exclusively in carrying dead-weight cargoes, also where great speed or light draught is a desideratum. At present, however, the cost of the new metal is a bar to its general use, and it is not found that in ships other than those intended for special work, the gain from reduced scantlings, and consequently greater carrying capacity, is so much as to pay for the greater first cost. Then again, there is the still unsettled question as to the durability of mild steel.

Recent experiments have seemed to indicate that it does not corrode more rapidly in salt water than iron does. A short time ago it was confidently asserted that it did, and altogether nothing is known for certain on the subject. The result of some prolonged trials made by the Admiralty is stated to be that the mild steel corroded more rapidly at first, but more slowly subsequently. To owners of merchant ships this question of corrosion is of extreme importance. If mild steel does corrode quickly in salt water, the reduced scantlings will be nothing more than a delusion and a snare, seeing that the same extent of corrosion will, with the lesser thickness of plates, be of the more importance.

Mr. Barnaby, the Director-General of Naval Construction, took part in the meetings, and stated that the Admiralty have now definitely decided to build their ships entirely of mild steel, armour-plates of course, excepted. We understand that they are now paying a less price for steel plates than for the iron they have been using in shipbuilding, about as much less as private shipbuilders pay more. This arises from the fact that the Admiralty have always paid fancy prices for iron, on account of the severe tests which they have exacted; their rigid testing of mild steel plates is merely a developement of the same system. With Lloyd's Register, and we believe with the other Registries, which together practically regulate or have regulated the procedure of the private shipbuilding trade, there has been virtually no testing at all in the case of puddled iron. They, however, prescribe tests for mild steel, identical with the Admiralty test, and this is no doubt the reason of the high price of the new material. One of the shipbuilders present, Mr. Michell, in the course of some remarks upon the subject, said he had been told by steel makers that if there were a steady demand they could supply ship plates more cheaply, and on the other hand, he himself could state that if the makers would reduce the price £2 to £3 per ton, a large demand would spring up.

A further interest attaches to the meeting of the Iron and Steel Institute this year from the fact of its being held in Paris for the first time. We believe it is the second instance of the meetings being held out of England. One of the papers to which we more particularly desire to call the attention of our readers was suggested

by the Paris Exhibition; its title is, "On the Most Recent Advances in the Manufacture of Iron and Steel, judged on the ground of the Paris Exhibition," by Professor Akerman, of Stockholm. On the same day a paper, "On the Mechanical and other Properties of Iron and Mild Steel," was read by Mr. Daniel Adamson, giving the results of a most valuable series of tests of mild steel and iron, and also of experiments on the comparative corrosion of the two metals in salt water. This was followed by a paper, by M. Ernest Marche, of Paris, entitled, "On Certain Matters affecting the Use of Steel." It is not our purpose to give an abstract of these papers, although they are full of interest. We propose to confine our remarks on them to those parts which appear to throw light upon the question of the use of mild steel in shipbuilding.

Mr. Akerman, in the early part of his paper, refers to the fact that the Siemens-Martin process of steel making by the open-hearth furnace, dates from the time of the last Paris Exhibition, eleven years ago, while Mr. Bessemer's invention goes back ten years more. Our readers will remember that in former articles* we have referred to the fact that mild steel or ingot iron was first produced by the former process, although it is now made by both methods, and with equally good results. The reason for the prevalence of the opinion that better results might be obtained from the Siemens-Martin than from the Bessemer process, Mr. Akerman thinks, is the fact that some works which produced metal by both processes used better material for the former than the latter; but it has since been found that where similar materials are used, the results obtained are equally good. In noticing exhibits of Bessemer steel, some boiler plate of Hungarian and some of Russian manufacture is specially referred to; also a remarkable specimen shown by the West Cumberland Iron and Steel Company, in which "to give an idea of its good quality, a large hole has by the help of dynamite been driven through the middle of the plate without its being possible to see that any portion of the plate has been wrenched away by the violent explosion, for the hole is bounded by edges that have been bent

* *Nautical Magazine*, February, 1878, page 104.

out at right angles, but have not been torn off." An interesting series of exhibits of the Swedish Iron Board is also referred to as contrasting the character of Bessemer and Siemens-Martin plates with puddled plates, all made from Swedish iron. The mild steel plates, when tested with a falling weight, withstood five to nine blows from a height of 15 feet without the least failure; the Swedish puddled plate only withstood four to six blows of the same weight from only one-third of the height. The puddled plate, moreover, was of such excellent quality that, as compared with *best best* Staffordshire and *best* Yorkshire plates, the Staffordshire gave way with one blow from a height of 39 inches, and the Yorkshire plate stood only three blows as compared with the four to six of the Swedish plates. When the mild steel was tried with the same fall of the weight as in the case of the iron, that is, 5 feet, the mild steel stood twenty-five blows; but when, on the other hand, the puddled plate was tried with a fall of 15 feet the weight passed through it at the first blow. The ball used as a falling weight was over seventeen hundred weight, and its lower part of spherical shape, with a diameter of about 10 inches; the plates experimented upon being securely stretched over a cup more than twice the diameter of the ball. The plates were all 9 millimetres, that is $5\cdot67$ sixteenths of an inch thick. Further, the buckling before signs of fracture in the mild steel was about 6 inches, in the puddled iron never as much as 4 inches before actual fracture. We have quoted the details of these experiments because they deal, in the case of the puddled-iron, as also indeed in that of the mild steel, with presumably the best variety of the metals compared. The experiments also bring out incidentally the bad effect of the presence of phosphorus in iron as regards capability of resisting blows, the main difference in the chemical composition of the three varieties of puddled plate being that the Swedish plates contained less than $\cdot02$ per cent. of phosphorus, the Yorkshire $\cdot09$ per cent., and the Staffordshire $\cdot2$ per cent.

A considerable portion of Professor Akerman's paper is devoted to the important subject about which we are much in the dark, viz., the effect of manganese upon the qualities of mild steel. It is

a well-known fact that manganese has been found of great service in the production of a metal which has well stood the prescribed tests, though as to what part manganese plays there has been much difference of opinion, some authorities even have said that its presence in the final product is a matter of no moment, its use being to assist the process of manufacture. Professor Akerman tells us that thoroughly reliable mild steel free from *red-shortness* can be made without extra addition of manganese at some Bessemer works where the iron used is of exceptional quality, the works at Westansfors, in Sweden, being cited as an instance. This is the more easy to accomplish, as the iron, on the one hand, contains more manganese, or, on the other, less sulphur. We may explain that *red-shortness* is the term used by smiths to describe that condition of iron in which it is difficult to work at a red heat. With ordinary iron pig, it is necessary to use large quantities of manganese to counteract the defect of red-shortness, and the quantity of manganese must be greater as the proportion of carbon is less. The ordinary compounds of iron and manganese contain more than $4\frac{1}{2}$ per cent. of carbon, and hence to produce mild steel, in which there is very little carbon, it is necessary to use metal exceptionally rich in manganese, or else some specially prepared alloy in which there shall be much manganese and little carbon. Some ten years ago, *ferro-manganese* was introduced for this purpose, but was not taken up by English manufacturers on account of its heavy cost; it was, however, used largely at Terre Noire, in France, and after a new method of making it had been invented its price fell so much that it could be used still more advantageously, and a compound is now in use containing over seventy per cent. of manganese. In connection with his remarks upon the employment of ferro-manganese in the manufacture of mild steel, Professor Akerman goes into some important facts connected with the presence of phosphorus in the metal. First noticing the remarkable though well-known effects of the joint presence of carbon and phosphorus—both these bodies affect iron somewhat in the same manner, increasing its hardness, elasticity, tensile strength, tendency to crystallize when heated and consequent brittleness, and diminishing its ductility—with the important

difference that carbon is more active in increasing the good qualities mentioned, while phosphorus is less active for good and more for evil. The evil effects of each are, however, highly intensified when they are present together.

As an illustration of this, it may be stated, that in steel rails containing $\cdot 5$ to $\cdot 6$ per cent. of carbon, the quantity of phosphorus must be kept under $\cdot 1$ per cent., whereas if the carbon is between $\cdot 2$ and $\cdot 3$ per cent., with manganese to the extent of $\cdot 5$ to $1\cdot$ per cent., as much as $\cdot 2$ to $\cdot 3$ per cent. of phosphorus may be present without having a worse effect upon the quality of the rail. The effect of manganese has been to counteract the injurious effect of phosphorus, and at the same time to increase the hardness of the metal. Ferro-manganese has been used largely in the French works at Le Noire, and has there been found useful in producing a metal containing a small per-centage of carbon and a large proportion of manganese. It may be as well for us to notice at this point that the president of the Institute, Dr. Siemens, condemns the use of manganese in the manufacture of mild steel. He considers that in cases where mild steel has corroded rapidly, the corrosion is largely due to the presence of manganese, which he says is merely a cloak for prejudicial materials, and by its help steel makers are able to get an inferior class of metal through the rolls. Thus Professor Akerman, who appears to favour the use of manganese, and Dr. Siemens, who so emphatically condemns it, are substantially agreed in one point, a point in our opinion of the utmost importance to shipowners. A substance whose presence is most injurious to the metal, may according to the one be neutralized, the other says "cloaked" by manganese, that is, the complex product may behave in just the same way in working, and stand the same tests as the metal of more simple composition. All experiments as to the corrosion of mild steel are comparatively useless then, unless it is known in each case whether it is or is not manganese steel that has been experimented upon.

Reference is also made in this connection to the results of some experiments on iron specially undertaken to ascertain the influence of varying percentages of phosphorus. One series of these experi-

ments was made at Terre Noire, and another in Sweden. Our readers will remember that in the tests for steel prescribed by the Admiralty and by Lloyd's, one very important requirement is that the specimen broken in the testing machine shall have a certain percentage of elongation before breaking. One part of the experiments in each case referred to, was to ascertain how the percentage of elongation was affected by the presence of phosphorus in the iron. The results of the experiments do not agree, as those at the French works show that, contrary to what one might expect, "a content of phosphorus of up to .3 per cent. had no special influence on the percentage of elongation at breaking." The writer goes on to remark that—"Should this observation come to be confirmed by continued experiments, it would afford the clearest proof of the insufficiency of tension tests alone as a means of the judging of the goodness of iron, for the Terre Noire and the Swedish experiments agree in another point, inasmuch as they both show that phosphorus very considerably increases the sensitiveness of iron to blows. Even if tension tests of phosphoriferous iron gives excellent results, increased tensile strength and undiminished per centage of elongation, it is, nevertheless, both in tests of a falling weight and of daily experience, a settled matter, that an exceedingly small content of phosphorus has an injurious influence on the power of resisting blows, even of iron poor in carbon."

Having thus shown the importance of the question of the removal of phosphorus from iron, especially from iron pig, to be used in the manufacture of ingot metal, Professor Akerman goes on to describe at length, the researches recently made in that direction by Mr. J. Lowthian Bell. It is well known that by the process of puddling, a large quantity of phosphorus could be eliminated, and thus a highly phosphoriferous raw material, such as the Cleveland pig, could be made use of in that process. Now that puddled wrought iron is being gradually superseded by Bessemer steel and by ingot iron, in the manufacture of which phosphoriferous pigs cannot be used, the removal of phosphorus from the pig becomes a question of the highest importance. It would be outside the scope of this article for us to

go into this part of the question at present. Mr. Bell's proposed method has not been tested in such a manner as to enable an opinion to be formed upon its ultimate financial success. Professor Akerman also makes some remarks upon the steel castings exhibited at Paris. With this subject, however, we have no concern in the present paper.

(To be continued.)

OUR TRADE WITH THE PERSIAN GULF.



COMBINATION of circumstances which can hardly be regarded as fortuitous has of late years directed attention to the Persian Gulf as a channel for trade and commerce. More than a century since, the King of England had treaty relations with the Shah of Persia. On the 2nd of July, 1768, we concluded a Treaty of Commerce with Persia, followed in 1801 by a Treaty of Commerce and Navigation, by a further Treaty of Commerce in 1814, to which in 1841 was appended a stipulation for favoured-nation treatment, further confirmed by a Convocation entered into in March, 1857, the year succeeding the war with Persia. Between 1820 and 1847 certain arrangements were entered into by Persia with this country respecting the Persian Gulf and the navigation of the northern or Persian shore, and those arrangements, which appear to have been framed in a liberal spirit, are still in operation. The Persian Gulf, properly so-called, is a long arm of the sea, flowing between Persia and Arabia, lies about north-west and south-west, and is entered from the eastward by the Strait of Ormuz. The principal ports on the Persian shore, and the only places it may be said which are resorted to by British shipping, are those of Bushire, Bunder-Abbas, and Bassorah, or Busrah, the latter lying at the head of the Gulf, and on the wide stream formed by the junction of the waters of the Tigris and Euphrates, as they roll towards the sea. The navigation of the Gulf, although in some respects intricate, is now divested of the dangers which at one time threatened ships venturing upon its

waters, by the careful surveys which have been carried out under the direction of the Indian authorities. The Arabian shore is little frequented to the westward of Muscat, except by country vessels, which resort there for the collection of the produce of the pearl fisheries, which on that coast are prolific. For many years our trade with the Persian Gulf attracted little, if any notice, and even now the annual value of the trade with Persia falls considerably short of a quarter of a million. Still, although the imports into the United Kingdom show of late years a decline, the exports from this country to Persia have been recently considerably on the increase. We take from Persia fruits, boxwood, gum, opium, galls, and silk when it offers; and we send to Persia coals, fuel, cotton yarns and fabrics; metals—copper, wrought and unwrought; refined sugar, and some other articles. There seems to be no doubt that our trade with Persia direct would be much larger than it is, but for Russian influence and interference. Not only has it been the policy of Russia to absorb the Persian trade by the line of the Caspian, but that overweening power has endeavoured to grasp the trade of both Northern and Southern Persia, and to control the lines of commerce between the centres of trade in Persia and the ports of the Persian Gulf. So manifest has this design become, that sometime since it was suggested that a trade might be opened along the line of the River Kārūn, between the Persian towns of Ispahan and Shaster, and the ports of Bassorah and Mohammera, to be worked in connection with the steamers from Bombay, Kurrachee, and London. This scheme, if carried out, would divert the Indian and European trade from the ports on the northern shore to the head of the Gulf, where the greater part of the deliveries and shipments in the oversea trade really take place. The port of Bassorah receives produce for shipment, which passes along the course of the Tigris from Baghdad, and it has been thought that there is no reason why Bassorah and the adjacent port of Mohammera might not become depôts for the produce of the provinces of Western Persia—more particularly as they are parts to which ships in the oversea trade constantly resort. The opening of the Suez Canal was to some extent the commencement of a new era in the trade with the Persian Gulf. Before

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that highway was opened to commerce we think we are correct in saying that no steamer ever entered the Persian Gulf from a port in the United Kingdom ; now steamers are laid on for the Gulf as readily as for Bombay or Kurrachee. This, of course, has produced a complete revolution in the commerce of the Gulf by bringing the Persian ports, and those of Turkish Arabia, into direct connection with the leading ports of Great Britain. There is, besides, a new branch of traffic which has been developed since the opening of the Canal, namely, the pilgrim trade. At certain seasons the Mahommedan Hadjis assemble in great numbers at the Egyptian ports of the Red Sea, at the Indian ports, and at the ports of the Persian Gulf, waiting for a passage to Jeddah, which is the port of debarkation for pilgrims making for the shrine of Mahomet at Mecca. These pilgrims are carried, during the season, in great numbers, and at remunerative rates. The reported outbreak of plague at ports in the Persian Gulf, during the year 1876 and the early part of 1877, had naturally a damaging effect upon the trade with Persia, as well as with Turkish Arabia, and the rumoured appearance of the epidemic was sedulously turned to account to interrupt the trade with the ports of the Persian Gulf. It is not, however, by artifices such as these that the current of events is to be stayed, or the course of trade diverted. The trade of the Persian Gulf has, for a considerable period, afforded employment to a number of steamers running between the ports of the Gulf, Bombay, and Kurrachee. The opening of the Suez Canal has imparted a stimulus to the efforts already made to connect Persia by sea with British Ports. These efforts have not been unsuccessful, although, from the nature of the case, the trade with the Persian ports is not a large one, and can only be expected to develope gradually. But it may be regarded in some respects, and so far as it is direct with Suez and with the United Kingdom, as a comparatively new branch of commerce. It is not, and never has been, large, but it has a distinct interest for some merchants and shipowners, who find their account in following it up, and aiding in its development.

MERCHANT SEAMEN BILL, 1878.

BRITISH subjects on the high seas are outside the protection of the common law. Formerly the Laws of Oleron and the Customs of the Sea determined the relations between man and man on board ship. But now succeeding Acts of Parliament, based on the Act of 1854, and including upwards of 600 sections, govern the legal conditions of life at sea. In some respects the change is not altogether for the better. In the passing of such Acts those members who represent seaport towns, and those who are employers of sea-labour have great influence. But the members for mercantile seaports owe their position partly to the votes of crimps, clothiers, and publicans, the creditors and natural foes of sailors, and to those of employers. As those who pass their lives on board ship do not possess votes for Parliament, no political purpose can be served by befriending them. It is, then, no wonder that these Acts of Parliament lean sometimes to the sailors' creditors, the crimp, the publican, and the employer, rather than to the men who, in every variety of climate and of weather, carry their lives in their hands from day to day, and from night to night, in the struggle for daily bread for themselves and for their families. In one important respect, the legal protection to life at sea, the special Acts of Parliament fall far short of the common law of the land, and even of the ancient sea law of the dark ages. "The Blacke Booke of the Admiralty" gives, in an addendum to the "inquisition taken at Queenborough by the command of our Lord King Edward the Third," a law for which we have now no parallel. It says, "Item, lett inquiry be made concerning the death of a man whoe hath beene killed in a ship, vessell, or boate, or apparrell of any ship, how and whoe killed him, and whether by the ship's apparrell, by what apparrell, and unto whome the ship did belong." The modern Acts of Parliament make no provision for enquiry into the cause of death at sea, unless a loss of property by the shipowner or merchant be involved. And the common law does not call for a medical enquiry and certificate

as to the cause of natural death at sea; nor does it hold any inquest when the death is obviously by sudden or violent means, other than red-handed murder. Is it any wonder then that when "dead men tell no tales," upwards of two-thirds of the deaths of seamen in the British Merchant Service, out of the United Kingdom, during the year 1877, resulted from so-called "accident" or other violent means? As to the remaining third, or rather fourth, no properly instructed enquirer asks how they died; but a merchant captain, wholly ignorant of medical diagnosis, informs an equally uninformed Collector of Customs, or Mercantile Marine Superintendent, which out of forty different diseases the sailor died of, and what treatment he received. Assuming that the merchant captain and the Collector of Customs do know what "hypertrophy laryngitis," &c., really are, and what medical treatment the disease should have received, and that 1,088 seamen did die from disease, and not from the mistakes of their fellow-men, this is only about one-fourth of those seamen who died on the high seas and abroad in the British Merchant Service during the year 1877. Here are the numbers:

Seamen died by disease	...	...	...	1,088
Drowned by wreck	...	...	...	1,461
Drowned by other accident	...	...	...	1,077
Other accident	...	...	...	340
				<hr/> 2,878
Murder and homicide	...	...	...	18
Suicide	...	...	...	36
Unknown causes	...	...	...	151
				<hr/>
Total	...	...	...	<hr/>4,181 <hr/>

Taking this Parliamentary return for what it is worth, ought not a legal inquest to have been held on all the deaths by so-called accident, murder, homicide, suicide, and unknown causes? Had such legal inquest been held on the return of the ship to an English port, as is held in like case when Her Majesty's subjects on land are killed, we have little doubt but that the returns of succeeding years would not show nearly three-fourths of the deaths of merchant seamen at sea and abroad as

due to violent means. But as legal protection to life at sea was not included in the Merchant Seamen Bill for 1878, we need not pursue this subject further.*

The Merchant Seamen Bill, 1878, was a very modest one, but its modesty did not secure for it the honour of passing into an Act. The change of Presidents of the Board of Trade led to its withdrawal from the House, just as it had got successfully through the ordeal of the Select Committee. We are quite sure that personally Lord Sandon would be as willing to push the Bill through as Lord Norton, but Lord Norton had the advantage of not representing a seaport town, with many voters fattening on the vices which the present Acts of Parliament force upon merchant sailors. How far Lord Sandon's constituents at Liverpool would approve his action if he made the stand which Lord Norton did upon the Select Committee, remains to be seen.

The Bill dealt with the extension to seamen of the Employers and Workmen Act, and the Conspiracy and Protection of Property Act. This clause, involving the abolition of the powers of arrest without warrant, and of summary imprisonment of those sailors who sign an agreement to serve in a given ship and who fail to join the vessel at the hour named, was strongly contested before the Select Committee. Then came certain disciplinary clauses, referring mainly to seamen absenting themselves without leave or deserting after joining their ships, and to insubordination on board. Damaging the ship or embezzling the cargo was to have been made punishable; and powers were taken to rescind the contract between the master and the seamen. Then came the vital part of the Bill, the payment and withholding of wages, on which the mass of the evidence before the Select Committee turned, and on which the hottest part of the contest raged. These wage clauses were to abate the credit system. They raise the direct issue of starving out the whole crimping fraternity,—the publicans, the brothel-keepers, the Jew-clothiers, the boarding-house keepers, and all their respectable “receivers,” who

* See “British Merchant Seamen,” in *Fraser's Magazine* of August, 1873, No. XLIV., p. 250, &c.

feed upon the earnings of seamen. Other wage questions, not in the Bill, were raised before the Select Committee. These directly attacked the pauperising of sailors' families by employers, who pocket the earnings of seamen during the whole period of their absence from England, even though it be one or two years' wages, and who then pay the whole sum, but without interest, in such a manner that it probably goes into the hands of the Parliamentary voters we have enumerated. In other words, shall the sailor, or his relatives, or his bankers, be entitled, at the request of the sailor, to have half his back earnings paid to them, in his absence, monthly?

Another wage question raised before the Select Committee, which is not in the Bill, is whether sailors shall continue to forestall their earnings by receiving for their families, or other assignees, one month's wages before they are earned, in the form of an advance note? or whether this sum also shall be pocketed by their employers, without interest, till the end of the voyage? These wage questions are the only matters in the Bill corresponding to its title. As to all else in the Bill, it might as well be called a Shipowners' Bill.

There are also some miscellaneous clauses, which are of no special benefit to seamen, except the one excluding the "runners" of the fraternity who prey on sailors, from ships arriving from abroad, without the sanction of the master. Even this would have no value whatever if the mode of paying wages were equitably arranged, for then it would not be worth anybody's while to pay "runners" to defraud sailors.

Crews arrive in port with from £20 to £80 of back wages due to them by employers who pay no interest on the amount. They are then dismissed from their ships without a penny in their pockets, notwithstanding this debt owing to them, to wait for some days in idleness and not earning wages, at a distance from their homes, for their payment and release. They must have recourse to credit for the necessaries of life during the interval between dismissal from their ships and payment of their wages with formal release from their engagement. So long as this Parliamentary law exists, crimping must be a profitable trade, and crimps, having

votes, will naturally bring pressure to bear on their representatives in Parliament, to impede such alterations in the law as would starve them out. Mr. William Tulley, of Hull, was asked, Q. 2,525, "Are you aware that those runners get on an average about 16s. a week permanent salary, and from 5 up to 25 per cent. on the sailors' disbursements?—So I am informed, and more than 25 per cent." Q. 2,529: "They have bottles of rum in their pockets, and they prime the men before they go on shore, and they keep them under their hands and victimise them thoroughly." Q. 2,530, "There is a regular system, is there not, of percentages received by those men from the public-houses, from the outfitters, and from the boarding-house keepers?—I believe that system is in existence. I am told that there is one tailor in Hull who keeps as many as six or eight runners."

The remedy proposed by the Bill was simply to compel the employer to pay the wages during the period the seaman was kept out of work waiting for his back pay. This would make it the interest of the employer to shorten, as much as possible, the penniless period of waiting out of work, far from home, for his accumulated earnings. There was also a clause requiring that the seamen should be paid one-fourth of the wages due, or two pounds of his own money, before being turned out of his ship. The clause also allowed him to sign a release, which would admit of his leaving the port, and going home or to sea again at once, the balance of the back wages due being forwarded to him when the employer's accounts are made up. Nothing could be more equitable than the proposals of the Bill, so far as they went. But the Bill did not touch the matter of half wages being paid to the sailor's assignee monthly, as earned, under the name of an allotment note. Nor did it notice the advance note, against which the Royal Commission reported, and against which some of the best shipowners gave evidence.

There are two sides, however, to the advance-note matter. It has a use as well as an abuse. A much better substitute can be found for its *use*, in making the payment of the monthly allotment note of half wages, already earned, compulsory upon the employer. But, till this payment is made compulsory, the use of the advance

note in providing for the family of the absent sailor ought not to be wholly forgotten. It also helps to provide respectable men with clothes for the voyage. Mr. John Williamson, shipowner, of Liverpool, says, Q. 1,657, "I should think that with the respectable and better class that I have named to you, of which there are a very small proportion in long-voyage ships, the note is cashed, and the proceeds given possibly to the wife or any relative he has; but with all the others, they are in the hands of the crimp, almost entirely so." Captain Henry Toynbee, F.R.A.S., the talented author of *Sailors' Wants, and how to meet them*, says, Q. 4,181, "I have not the slightest doubt that good men give their advance notes to their wives." And Mr. N. Dunlop, shipowner, of Glasgow, says, Q. 4,270, "I have no hesitation in saying that, whenever the notes about which I have spoken were presented by wives, they were made a good use of, and all those that were in the Sailors' Home were made a perfectly good use of."

The loss to sailors in cashing advance notes, which are only payable after the ship has sailed with the man actually on board her, is very various, but always considerable. Mr. Williamson explains, Q. 1,661, that "The shipowner has a return sent him by the shipmaster through the pilot, giving the names of all the men on board, and then when the advance note is presented at the office ten days after the ship has sailed, the clerk will look at the return and see whether that man's name is on the list, and if he is not amongst the desertions he pays his advance note; but if he is amongst the desertions it is not paid, and the note is valueless." Ordinary traders or bankers will not cash them. So that unless the sailor or his wife can find a kind friend able and willing to advance money on the advance note, it must ordinarily be taken to a crimp.

The manager of the Sailors' Home, Liverpool, cashes advance notes for sailors lodging there at, Q. 3,293, "one shilling in the pound; five per cent;" but he says, Q. 3,895, "I should think the average would be about 12½ per cent. outside the Home; it varies from 5 to 15 or 20 per cent." Dr. A. Commins, Barrister, of Liverpool, however, says, Q. 685, "I should say the discount he is charged will amount to 20, 30, or 40 per cent." Mr. R.

Duncan, shipowner, of London, mentions, Q. 2,110, a special case of the ship *Sunbeam*, which he refers to again, Q. 2,278, "I should say on an average 25 per cent. is taken off; and if a man for £3 only got two bars of soap and ten boxes of matches, a tin pot and a pannikin, you may judge how others fare." Q. 2,039: "The sailor gets an advance note, and he is obliged to find some one that will cash the note for him, and that of necessity takes him into these lodging-houses, or to these crimps as a rule, who cash his note for him, and therefore he very often gets but a very miserable amount of his advance note; and it is the interest of these parties that he should be put on board the ship before he is very well able to make counter-reckoning with them in reference to it." It is, in short, the interest of the discounter to take the sailor in charge and to make him drunk, and keep him drunk till the ship sails. Captain R. Pitman, R.N., of the Board of Trade, a thoroughly well-informed and reliable witness, who was closely cross-examined on this subject, mentions, Q. 4,525, the case of a man put on board the *Esipingo*, at Gravesend, in February last, who received "in exchange for the advance note, a ragged kit which was not worth ten shillings. That crimp, you see, took the trouble to bring him down (from London), and that is all he gave him in exchange for the £3 or £5." And he points out, Q. 4,524, that "It is not only the loss of his money, it is what results from that money being taken from him. It results in drunkenness, and he is pitchforked on board ship in that state with a very poor kit." He adds, Q. 4,670, "I think in the worst cases the sailors probably lose about 70 per cent.; that is to say, the boarding-house keeper receives fully 70 per cent. from the note." On the other hand, Mr. N. Dunlop, shipowner, who is in favour of the present system, thinks, Q. 4,203, that "the evil is not in the advance note, but in the sailor and his surroundings. . . . Boarding-house keepers and others who lodge the sailor or provide his clothes, very properly get a large share of the proceeds of his advance notes; and there are some who prey upon the sailor and get a share dishonestly, but *so they do at the end of the voyage when his whole earnings, save his advance, are paid him.* The evils brought to light by the advance note are more under the

eye of the public when they occur at the beginning than at the end of the voyage, *but they are tenfold greater at the end than at the beginning.*"

The evil attendant on crimping of outward bound merchant sailors, is not so much the loss of money, though that is considerable, as the loss of health, of character, and of self-respect which it entails. It usually begins before paying off, when the sailor is thrown of necessity into the hands of the crimp for food and lodging, &c., whilst awaiting in a penniless condition the payment of his accumulated earnings. But merchant seamen who, despite the law and their employers, escape the crimp on paying off, may subsequently get into his clutches when embarking for the next voyage. The advance note seems ingeniously arranged for the crimp's benefit. Dr. Commins, Barrister, of Liverpool, describes the process, Q. 449, "Seamen generally stay on shore as long as they have got money to spend, and when they have spent their money they get into the hands of the boarding-house keepers and clothier's outfitters, as they are called. These men sometimes advance them money, and sometimes the boarding-house keepers allow them to remain at their houses a week or two without receiving any money; they then compel them to join a ship; they bring them to the shipping master, or to the Sailors' Home, and find a ship for them; they get their advance notes, and give them plenty of drink after they have got the advance notes. Then the seaman thinks he is robbed by the boarding-house keeper or by the crimp, who takes advantage of him in that way, and in order to spite him he avoids joining the ship. He allows himself to be made drunk, and does not turn up when he should join the ship in the morning, and he thinks he is having a piece of revenge on the boarding-house keeper." Q. 450: "The boarding-house keeper loses the advance-note, I suppose, in that case?—Yes; the owner of the ship promises to pay the holder of the note a month's wages ten days after the sailor has sailed on board the ship." Q. 721: "I believe there are often desertions because the sailor thinks he has been robbed or cheated by the boarding-house keeper or outfitter, and he deserts maliciously, in order to put him to a loss; I mean so that he may lose his advance-note."

Mr. R. Duncan, a large London shipowner, whose evidence on this point is deserving of very serious consideration, adds: Q. 2,186, "They get a month's advance before they have worked for it, and it goes by the term of the 'deadhorse'; the man is working out the dead horse the first month he is away, and therefore, as a rule, he is an indifferent sort of fellow in the fulfilment of his duties, from his having got the pay for this first month; and if the ship goes into the Channel from stress of weather or otherwise, he is all but certain to desert." The men are placed on board their ships literally at the very last moment as their vessels are being towed out of the docks, jumping on board as their vessels pass the pier-heads.

Mr. E. S. Hill, shipowner, of Cardiff, says, Q. 1,962: "If you were down at Cardiff, you would see the crimps coming in with the men in carts with their boxes, and they are often put on board while the vessel is going through the lock." Mr. John Williamson, of Liverpool, says, Q. 1,626, "The men join at the last moment. If you go to the pier-head you will probably see half the crew or more bundled in with their kits at the pier-head, while the vessel is actually under weigh, and if they miss them at the wharf, some of the men are sent out with a boat to get put on board down the river. We cannot tell till the vessel has gone who has neglected to join." Moreover, Mr. E. S. Hill, says, Q. 1,787, "The men, in the majority of instances, come on board vessels for a long voyage totally unprovided with any kind of outfit at all." Mr. R. Duncan is asked, Q. 2,213, "Notwithstanding that advance notes exist, a large proportion of seamen shipped are in a deplorably destitute state as regards clothing?—Very bad indeed." And Captain H. Toynbee, F.R.A.S., says, Q. 4,139, "The advance note men are as liable to come on board destitute as they would be if they had no advance note; I think the advance note does not provide the sailor with clothes in many cases." The crews too often embark in a state of insobriety and disease that unfit them for duty. Mr. P. T. Petersen, shipmaster, says, Q. 983, "It is very rare to find five sober men out of twenty." Mr. R. Duncan says, Q. 2,030, "Indeed, as a rule, the men who have them in charge, the men in whose houses they are

living, do not want them to get sober and go on board of the ship. If the sailor were sober he would look into his account and see how he had been treated; and their business is to get him on board in a state in which he is incapable of checking the accounts, and seeing how he has been dealt with." Q. 2,136, "He wants to get him away while he is in that state. He does not want him to be sober when he parts with him, because he would be able to have counter-reckoning with him, and see how he had been robbed, very possibly." Mr. E. S. Hill, says, Q. 1,981, "It cannot be for the welfare of the men or the owner that they should be brought on board drunk." Mr. N. Dunlop thinks there are also natural causes at work other than the crimps. He says, Q. 4,171, "It is a lamentable fact that very many sailors upon the sailing-day are more or less under the influence of drink. They have before them a long period of compulsory total abstinence, especially in sailing ships, and this, together with the so-called socialities of leave-taking, and the drinking facilities in the neighbourhood of the shipping, leads them into excesses on the sailing-day."

In the five years ending with 1877, there were, at Liverpool, an annual average of 2,926 seamen who neglected to join their ships, and 60 who deserted from them, out of 107,998 who signed articles for voyages, and of these defaulters 193 were imprisoned annually for breach of contract, the owners refusing to prosecute in 1,250 cases. In other words, 2·7 per cent. of the men who signed articles for the voyage neglected to join; and, sad as these figures are, they hardly justify the wholesale aspersion that all sailors are "hopelessly reckless"—Q. 3,162. It is, no doubt, very reprehensible that 2·7 per cent. of substitutes should have to be provided after the ship has started, especially as the class of men who go as substitutes are generally bad characters. Mr. Petersen says, Q. 990, "If one of these substitutes is put on board a vessel there are always dissensions and annoyances and quarrels amongst the crew themselves, because one man has to do another (incompetent) man's work."

The evidence in favour of the abolition of the advance note is so overwhelming, that a leaning towards its retention is

very much shaken. Mr. John Williamson, in a long reply to Q. 1,583, which is worth reading, shows that the Sailing Shipowners' Association of Liverpool have been in favour of the abolition of this note for eight years. Mr. Edward S. Hill, chairman of the Cardiff Shipowners' Association, "hates advance notes," Q. 1,786, and says, that notwithstanding the note, the men, Q. 1,787, "come on board vessels for a long voyage totally unprovided with any kind of outfit at all." Mr. R. Duncan, of London, says, Q. 2,099, "the abolition of it would be a great boon to the family." But he forgets that the allotment note he wishes paid a month earlier instead, is not compulsory on the owner to grant. Mr. R. Duncan's evidence is very strong against advance notes—see Q. 2,203, 2,219, 2,213. The Superintendent of the Missions to Seamen Society also testifies, Q. 3,576, "I believe a great change would be effected very shortly by the abolition of the advance notes, and by improved payment of their inward wages."

The proportion of foreigners amongst those who man British merchant ships is a matter rather of opinion than of well-ascertained fact. Mr. Charles Wilson, M.P., says, Q. 736, "That three-eighths of the seamen shipped at Hull are foreigners." But all the evidence agrees as to the superior moral character of those from the northern countries of Europe, over those trained up under British shipowners. Mr. P. T. Petersen, of the Shipmasters' Society of London, says, Q. 1,178, "As a rule, foreign seamen are more sober men; they are not given to drink so much as English (merchant) seamen." Mr. John Williamson, a Liverpool shipowner, says, Q. 1,689, "I would be very willing to trust those (foreign) men with money, or advance notes, or anything; all those North of Europe sailors that we have in our ships are a sober, well-conducted class of men, and we should be very glad to man our ships with them." Mr. W. Tulley, a Hull shipowner, says, Q. 2,516, "The best men we get on board our ships, as a rule, are Swedes and Norwegians." Q. 2,517: "Are they more manageable or less so than the English seamen; are they more sober or less so, or what is their general character?—When they first come to an English ship they are sober, honest men, but after a few years they contract some of the habits of English (merchant)

sailors." This last answer tends to show that it is not so much the nationality of the seaman as the nationality of the employer that makes the difference in the moral conduct on board English ships.

The employer has the selection of the captain and the officers, and we are told, Q. 8,539, "Where men at sea have been under wise and Christian treatment by their captains and officers, whole crews will sometimes give part of their earnings to some charitable object, keep sober, put savings in the bank, go home, and about their business, like reasonable men." But employers sometimes prefer cheapness to efficiency in their officers, and Mr. P. T. Petersen, shipmaster, says, Q. 1,006, "Confidence and reliance used to be placed in the captain, and then his position was very comfortable, and the captain took a pride in his crew by treating them kindly; but now there is a feeling of antagonism one to the other. . . . There are some masters that would feel a vindictive feeling, and say, 'When I have got the chance I will punish all of you.' No legislation can stop a captain from petty annoyances to his crew." Q. 1,009: "Binding the seaman to you by kindness is better than legislation?—Yes, I think that will act better upon the Mercantile Marine." Q. 1,088: "The tendency of this evidence of yours, I take it to be, is to show us that indulgence and kindness, tempered with fairness and courage, is necessary to maintain discipline on board ships?—Certainly; better than all legislation."

Captain Digby Murray, of the Board of Trade, made some invaluable suggestions as to raising the status of masters of ships. It is utterly absurd to place the ignorant master of a small sailing craft, navigated by four or five men, in the same position of magisterial authority as the intelligent, highly-educated gentleman, who has the lives of, it may be, fifty engineers and seamen and several hundred passengers in his keeping. Captain D. Murray says, Q. 5,039, "At present, there are in the Mercantile Marine 26,085 men holding certificates of competency (so-called), and 14,000 possessing certificates of service as Masters for foreign-going ships, and of this entire number, i.e., 40,085, less than two per cent. hold extra certificates. It is quite clear that there must be some good reason why so few men pass the extra examination ;

there are many men holding certificates as Master ordinary, who are abundantly competent to pass the extra examination; and there are doubtless many more who could easily prepare themselves. That they do not take the trouble shows that, in their opinion, there is not sufficient inducement, and that the extra certificate confers little or no advantage on the possessor.

“At present, one man commanding a schooner carrying coal or manure, and another man commanding a steamship of, say, 9,000 tons displacement, carrying many hundred passengers, are equally shipmasters in the eye of the law. The one may be unable to read or write correctly, the other may be a man of considerable attainments, but they are both shipmasters, and this levelling down is, in my opinion, very prejudicial to the well-being of the service.

“The cure for it is to let certificates carry with them a certain rank in the Mercantile Marine. Have, say, three grades of commanders for foreign-going ships. Style the highest grade captains; the examination to be the same as at present for extra-master, with the addition of (certain other subjects). Second, commanders; the examination to be the same as at present for extra-masters, with the addition of a practical examination in tentative compass adjustment. Third, shipmasters; examination to be the same as the present ordinary examination. The extra examinations will then carry with them considerable advantage to the possessors of the corresponding certificates, not because they will obtain the barren title of Commander or Captain in the Mercantile Marine, but because those titles, being the indication of their superior attainments, shipowners will, under the circumstances, awake to the necessity of appointing men holding a superior class of certificate to first class, and especially to large passenger ships and steamships. There must, of course, be a penalty attached to a man assuming a style or title not warranted by his certificate.” The writer himself has fully entered into this, amongst other suggestions, for raising the status of merchant officers, pp. 185, 186, *Fraser's Magazine*, Vol. CCCCLXX., of February, 1869, and is thankful to see the subject revived. He then argued that, “if the State places summary magisterial powers in the hands of a subject, it

should not only define exactly their extent, but it should also be responsible for the selection of the person to whom they are delegated. This latter duty is already undertaken by the Government, but most imperfectly."

In the Royal Navy, seamen are paid in proportion to their capabilities, conduct, and experience. But in the Mercantile Marine, Q. 2,224, "the seamen receive an uniform rate of wages; whether they are clever seamen or the reverse, whether they behave well or badly, at the end of the voyage they receive the same rates of wages." Mr. John Williamson, shipowner, of Liverpool, has, however, pursued, for ten years, a plan of giving premiums to seamen for good conduct, or for continuous service on board his ships, the working of which is in the hands of the captain. He says, Q. 920, "It is not seamanship that enables them to get this good-conduct money, as we call it, but very good conduct; it must be something more than the ordinary V. G.; he must be a good steady man amenable to discipline, doing what he is told, and a man who does not use offensive language. For the first voyage we give that man 2s. 6d. a month beyond his shipping wages; if he goes a second time in any ships in our employ he gets 5s. a month for the next voyage, and ever after he retains it. Further we find that men with those good-conduct certificates which we give them are readily taken up, and I have had cases where a seaman will wait six or eight weeks for his own ship to go back again. But you must not forget that those men are the cream of the seamen." Q. 922: "Has it not a great effect in making good seamen?—No doubt, with good conduct, as a rule, he will be a good sailor in time." Q. 924: "Out of a ship's crew that arrived last week, I think all, except two men, got good-conduct money." Q. 925: "Those two men shipped at Calcutta, they did not go the round voyage of the ship, and we always make it a condition that the seamen who gets good-conduct money must go the round voyage in the ship." Q. 1,601: "Our principal reason for starting the system was to put a stop to insubordination, bad language, and all sorts of bad conduct on the part of the men; and I do not think we really have had a case in which we have had to enforce discipline in our ships." Q. 1,603:

"I am not aware of any (other shipowners) having done it, except my brother's firm, Balfour, Williamson, and Company." Q. 1,605: "For the first voyage they get 2s. 6d. a month beyond their pay, and after that 5s.; and afterwards they are always entitled to the 5s., even supposing they have gone away from us for several voyages and come back again."

Mr. Thomas Brassey, M.P., asks, Q. 1,607, "In those other ships all the seamen before the mast are on the same footing; no distinction is drawn with regard to the pay and treatment generally between the men who behave well and the men who behave badly; between the men who work hard and the men who are idle; between the men who are good seamen and the men who are not good seamen; they are treated practically on the same footing, are they not, except in those few ships sailed by yourself and by your brother, in which the principle of giving good-conduct pay prevails?" Q. 1,608: "Practically, as I say, in the merchant service generally the system of giving good-conduct pay, and raising the ratings as an encouragement to the men to behave well, does not exist?—I am not aware of it, except in those two employers that I have named."

The opinions expressed to the Select Committee as to the conduct and capabilities of merchant seamen varied most widely. Some shipowners had no complaints to make of them, others had hardly a good word to say for them. Mr. N. Dunlop says, Q. 4,203, "The evil is not in the advance note, but in the sailor and his surroundings." Q. 4,284: "They are bad from two causes: bad from drunkenness, and bad from wilful badness." Mr. Gourley, M.P., asks him, Q. 4,288, "What you mean to say is this—excuse me saying so, but it is the inference to be drawn from your reasons—that all seamen must be looked upon as criminals?—No, no; 200,000 men went to sea last year, not one of whom is a criminal." Yet the principal evidence before the Select Committee was on an assumption either that we sailors are criminals or idiots. Mr. W. Tulley, a shipowner, who had himself served 25 years afloat, very properly protested, Q. 2,557, "That the case of the well-conditioned sailor should be more considered. It appears to me that what we are dealing with is all tending

towards the evil sailor ; he abuses his privileges, and there is something taken away from him which will affect the well-conditioned sailor as well ; everything seems to tend to protect the evil-disposed sailor." Q. 2,533 : " We have been told by other shipowners that there is a considerable percentage of ill-conducted men, is that your experience ?—It is not our experience in Hull ; the majority of the sailors that we have are well-disposed and well-behaved men." Mr. P. T. Petersen, shipmaster, was asked, Q. 1,322, " In your experience have you found much difference between married and unmarried men ; have you found married men the better class of seamen ?—Yes, as a rule, I have ; I always like, if I can, to ship married men." Yet " the best class of owners," Q. 5,046, will not pay half wages of seamen to the wives of more than one-fourth of their men.

A police magistrate may be naturally expected to look at mankind with a somewhat jaundiced eye. Accordingly, Mr. T. S. Raffles, Stipendiary Magistrate of Liverpool, gives such a fearful description of seamen, that he is asked, Q. 3,162, " Is there anything in the character of a seaman that is hopelessly or irreclaimably bad ?—I think he is peculiarly reckless, that is all. I would not say that he is hopelessly or irreclaimably bad ; I think he is hopelessly reckless ; I am afraid so." How does the Stipendiary Magistrate of Liverpool reconcile this opinion with the fact that, in one year, 10,000 seamen boarded at the Sailors' Home of that town, and paid £51,000 into one of its savings' banks. The Mersey Missions to Seamen has employed two clergymen and six Scripture readers for twenty years, with, we would hope, some good results. We do not quite recognise our own likeness in Mr. Raffles's description, and we fervently hope it is not true of most of us. But many of the shipowners tell the same story to the Select Committee, forgetting that we are what our employers have made us. Mr. A. D. Leitch, a Greenock shipowner, has a similar opinion of the training given from youth in the Merchant Navy, and has small belief in sailors so trained wishing to make provision for their families whilst the husbands and fathers are absent at sea. He says, Q. 3,020, " If the cash was given at the time of shipment, it would never reach them—the boarding-house

keepers; it would go into the pockets of the women of the town and spirit dealers, before it ever got to the boarding-house keepers, unless they took it from them when they got outside the shipping office."

The Missions to Seamen Society has very intimate individualizing relations with merchant sailors in forty-three harbours and roadsteads around our coasts and abroad. Its fifty-eight honorary chaplains, and fifty-five chaplains and readers, see a good deal of the domestic and social life of seamen. They would naturally come in contact with most of the religious characters on board, but they have also much to do with the less well-disposed of the crew. They see them both when going outwards and when coming inwards; they see them, therefore, in the most excitable times, and, in some respects, under the least favourable conditions to the sailor. And the reports lead one to form a very different estimate both of the character and of the wants of seamen, from that entertained by the Liverpool stipendiary and by some of their employers.

That the training given by all English shipowners is not so wholly bad as to produce from good boys exclusively "hopelessly reckless" men, is seen from other evidence before the Select Committee. Dr. Commins, Barrister, says, Q. 717, "With regard to the Cunard Company, and the other great companies, is it not the fact that they have the best seamen to be found in the country?—Probably the best in the kingdom, both seamen and officers; they give the largest salaries, and, of course, in that way they will get the best." Q. 717: "Their seamen are employed permanently, and they get a good class of men, and they never are exposed to the necessity of any such proceeding," *i.e.*, as prosecutions and imprisonments for not joining their ships. And Mr. John Williamson, shipowner, says, Q. 1,537, "I do not think that the power (of arrest without warrant) is so absolutely necessary in steamers as in sailing ships, because, as a rule, they are a better class of men that go in steamers, and also they are, for short voyages, at least, comparatively shorter than by sailing ships," *i.e.*, the wages are paid more frequently and therefore in smaller amounts. Q. 1,744: "There is no doubt that the better class of seamen go in steam."

should not only define exactly their extent, but it should also be responsible for the selection of the person to whom they are delegated. This latter duty is already undertaken by the Government, but most imperfectly."

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"I am not aware of any (other shipowners) having done it, except my brother's firm, Balfour, Williamson, and Company."

Q. 1,605: "For the first voyage they get 2s. 6d. a month beyond their pay, and after that 5s.; and afterwards they are always entitled to the 5s., even supposing they have gone away from us for several voyages and come back again."

Mr. Thomas Brassey, M.P., asks, Q. 1,607, "In those other ships all the seamen before the mast are on the same footing; no distinction is drawn with regard to the pay and treatment generally between the men who behave well and the men who behave badly; between the men who work hard and the men who are idle; between the men who are good seamen and the men who are not good seamen; they are treated practically on the same footing, are they not, except in those few ships sailed by yourself and by your brother, in which the principle of giving good-conduct pay prevails?" Q. 1,608: "Practically, as I say, in the merchant service generally the system of giving good-conduct pay, and raising the ratings as an encouragement to the men to behave well, does not exist?—I am not aware of it, except in those two employers that I have named."

The opinions expressed to the Select Committee as to the conduct and capabilities of merchant seamen varied most widely. Some shipowners had no complaints to make of them, others had hardly a good word to say for them. Mr. N. Dunlop says, Q. 4,203, "The evil is not in the advance note, but in the sailor and his surroundings." Q. 4,284: "They are bad from two causes: bad from drunkenness, and bad from wilful badness." Mr. Gourley, M.P., asks him, Q. 4,288, "What you mean to say is this—excuse me saying so, but it is the inference to be drawn from your reasons—that all seamen must be looked upon as criminals?—No, no; 200,000 men went to sea last year, not one of whom is a criminal." Yet the principal evidence before the Select Committee was on an assumption either that we sailors are criminals or idiots. Mr. W. Tulley, a shipowner, who had himself served 25 years afloat, very properly protested, Q. 2,557, "That the case of the well-conditioned sailor should be more considered. It appears to me that what we are dealing with is all tending

towards the evil sailor; he abuses his privileges, and there is something taken away from him which will affect the well-conditioned sailor as well; everything seems to tend to protect the evil-disposed sailor." Q. 2,533: "We have been told by other shipowners that there is a considerable percentage of ill-conducted men, is that your experience?—It is not our experience in Hull; the majority of the sailors that we have are well-disposed and well-behaved men." Mr. P. T. Petersen, shipmaster, was asked, Q. 1,322, "In your experience have you found much difference between married and unmarried men; have you found married men the better class of seamen?—Yes, as a rule, I have; I always like, if I can, to ship married men." Yet "the best class of owners," Q. 5,046, will not pay half wages of seamen to the wives of more than one-fourth of their men.

A police magistrate may be naturally expected to look at mankind with a somewhat jaundiced eye. Accordingly, Mr. T. S. Raffles, Stipendiary Magistrate of Liverpool, gives such a fearful description of seamen, that he is asked, Q. 3,162, "Is there anything in the character of a seaman that is hopelessly or irreclaimably bad?—I think he is peculiarly reckless, that is all. I would not say that he is hopelessly or irreclaimably bad; I think he is hopelessly reckless; I am afraid so." How does the Stipendiary Magistrate of Liverpool reconcile this opinion with the fact that, in one year, 10,000 seamen boarded at the Sailors' Home of that town, and paid £51,000 into one of its savings' banks. The Mersey Missions to Seamen has employed two clergymen and six Scripture readers for twenty years, with, we would hope, some good results. We do not quite recognise our own likeness in Mr. Raffles's description, and we fervently hope it is not true of most of us. But many of the shipowners tell the same story to the Select Committee, forgetting that we are what our employers have made us. Mr. A. D. Leitch, a Greenock shipowner, has a similar opinion of the training given from youth in the Merchant Navy, and has small belief in sailors so trained wishing to make provision for their families whilst the husbands and fathers are absent at sea. He says, Q. 3,020, "If the cash was given at the time of shipment, it would never reach them—the boarding-house

keepers ; it would go into the pockets of the women of the town and spirit dealers, before it ever got to the boarding-house keepers, unless they took it from them when they got outside the shipping office."

The Missions to Seamen Society has very intimate individualizing relations with merchant sailors in forty-three harbours and roadsteads around our coasts and abroad. Its fifty-eight honorary chaplains, and fifty-five chaplains and readers, see a good deal of the domestic and social life of seamen. They would naturally come in contact with most of the religious characters on board, but they have also much to do with the less well-disposed of the crew. They see them both when going outwards and when coming inwards ; they see them, therefore, in the most excitable times, and, in some respects, under the least favourable conditions to the sailor. And the reports lead one to form a very different estimate both of the character and of the wants of seamen, from that entertained by the Liverpool stipendiary and by some of their employers.

That the training given by all English shipowners is not so wholly bad as to produce from good boys exclusively "hopelessly reckless" men, is seen from other evidence before the Select Committee. Dr. Commins, Barrister, says, Q. 717, "With regard to the Cunard Company, and the other great companies, is it not the fact that they have the best seamen to be found in the country?—Probably the best in the kingdom, both seamen and officers ; they give the largest salaries, and, of course, in that way they will get the best." Q. 717 : "Their seamen are employed permanently, and they get a good class of men, and they never are exposed to the necessity of any such proceeding," *i.e.*, as prosecutions and imprisonments for not joining their ships. And Mr. John Williamson, shipowner, says, Q. 1,537, "I do not think that the power (of arrest without warrant) is so absolutely necessary in steamers as in sailing ships, because, as a rule, they are a better class of men that go in steamers, and also they are, for short voyages, at least, comparatively shorter than by sailing ships," *i.e.*, the wages are paid more frequently and therefore in smaller amounts. Q. 1,744 : "There is no doubt that the better class of seamen go in steam."

Q. 1,745: "They have short voyages, and they have better food, because in the finer line of steamers they have fresh provisions almost every day, which they cannot have in a sailing ship in a long voyage; and if he be a married man, he sees his wife and family more frequently," and we should add is able to give his wife and family his earnings more frequently.

Captain R. Pitman, R.N., of the Board of Trade, speaking of the bad old times in the Queen's service, says, Q. 4,511, "When we were in the habit of paying the men off, probably £60 or £70 was due to the man at the end of a commission, and the whole of it went in the same manner as it does now with the merchant seaman, and produced the same demoralisation in those days as with the merchant seamen of the present time; but by degrees the Admiralty legislated for them, and an interest was taken in them, and now I do not think there is a better or more respectable class going than the naval seamen, and all this has been the gradual work of about thirty years." Q. 4,683: "What we want to encourage in the (merchant) seamen is, that they should put their money by, and I think that if you can encourage them to do that, the better it will be for them; and that they will readily grasp at it is seen by what is now the case with the naval seamen who have had this opportunity of putting their money by; and a great number have their banker's account, and they look to the future, and look to improving their condition, and it gives them a zest for doing so."

Let it once be clearly grasped that seamen in the Royal Navy, in the large steamship companies, and in the coasting trade, are in the habit of receiving their wages frequently, and therefore in small sums. Whether at sea or abroad, the men-of-war's man receives seven-eighths of his wages monthly, and the residue quarterly. He receives his earnings either into his own hands or he can assign five-eighths monthly to a friend by allotment note. In the three services we have named, the Queen's, the merchant steamers, and the coasting trade, crimping with all its demoralisations is well known. Where there is no accumulation of wages in the employer's hands, there is no need for a sailor's creditor or crimp, and no means of paying such a class. Consequently

crimps are unknown at the Naval seaports, and never attempt to board merchant steamers or coasters. It is only in the foreign-going sailing trade that the crimp is made a necessity, and that his trade becomes a paying one. Do away with the accumulations of pay in the employer's hands, by paying half wages monthly into a saving's bank or to a relative, and shorten the penniless interval on paying off, by making wages payable up to and including the day of release. The German law requires the employer to defray the home journey from the port of discharge to the port of embarkation, and to pay wages until the seaman's arrival there.

Safeguards of course there must be. And these Captain Pitman, R.N., proposed in his evidence, as also did the writer ; and as did Captain Toynbee, F.R.A.S. There really is no difficulty in the matter if employers would but, as Christian men and as business men, look into the necessary arrangements. These have all been thought out, as the evidence of these three officers shows, and there is no difficulty that will not vanish the moment employers see that they are themselves responsible for the evils under which merchant seamen suffer, which are mainly due to the bad arrangements by which wages are withheld for long periods ; by which delays arise in paying off ; and by which the payment of large sums takes place in the most immoral localities, and with the very worst surroundings, far from home and friends. It is to be hoped that a new Merchant Seamen Bill will remedy these defects in the present law, and that it may ere long become an Act of Parliament.

W. DAWSON, Commander, R.N.

ON GRADIENTS AND CURRENTS IN THE ATMOSPHERE.

NO fact in meteorology is more satisfactorily established than the intimate connection which subsists between gradients and wind. And that this should be so is not surprising when we consider that motion is only possible in any body along a plane of greater or less inclination or from a higher to a lower level. Place a waggon on a level

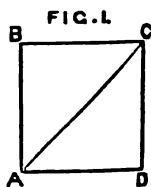
railway and it will remain at rest, but on an incline it will move with varying velocity according to the steepness of the gradient. The wind is no exception to this rule, but moves with greater rapidity the steeper the incline.

This being the case it becomes interesting to inquire how these gradients are formed: but before entering into that investigation, it will be as well to examine the relations existing between the currents and the gradients.

A gradient in the atmosphere is ascertained by barometrical observations taken at different places at the same time. For example, an observer at Liverpool notes that the barometer stands at 30.0 inches, whilst another at Wick at the same instant records a height of 29.7 inches. It is plain there is a decline from Liverpool to Wick, and as Wick is north of Liverpool the declination or gradient faces the north.

Now it has been found that the wind instead of rushing straight down the steepest part of the incline as we might naturally expect, makes a considerable deviation to the right of an observer looking down the gradient, as for instance, in the case of the gradient from Liverpool to Wick the wind instead of being southerly would be nearly westerly. In general terms it may be said that when the gradient faces the north the wind will be westerly; when it faces the south, easterly; the east, northerly; and the west, southerly.

The question naturally arises, "What causes this deviation?" The direction of the wind is evidently the resultant of at least two forces—one acting in the line of steepest descent, and the other must be a motion of the gradient thus: Let A B (Fig. 1) represent force of inclination acting along line of steepest descent, and A C direction of wind; then, by the law of analysis of forces, there must be a force acting in the direction A D, and this force can only be explained by supposing the gradient to have a motion in that direction.



Although, for the sake of illustration, a distinction is thus made between the gradient and the wind, it must not be inferred that there is any real separation.

We see, therefore, that the motion of the gradient will be, speaking roughly, towards the right-hand side of an observer looking down the line of steepest descent.

As the wind is known to circulate the gradient must do so also, and it will be shown further on that it rotates in the northern hemisphere from north through east to south, and from south through west to north, that is to say, with watch hands.

In the southern hemisphere the deviation of the wind is to the left, and the circulation there is against watch hands.

The gradient has also a progressive movement, causing a rise or fall of the barometer as it passes over a district.

The direction and force of the wind is thus the resultant of three forces.

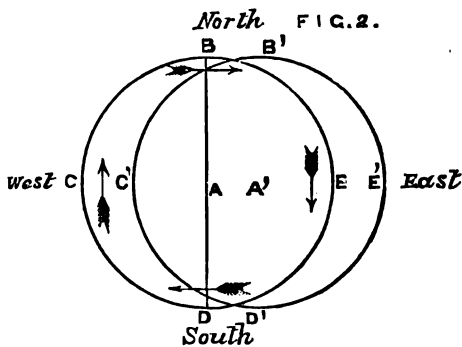
First, The inclination of the gradient.

Second, Its rotatory motion.

Third, Its progressive movement.

This progressive motion of the gradient resembling in some of its features the rising and falling of waves, it will be convenient to use the term wave.

Let B C D E (Fig. 2) represent such a circular wave in the atmosphere; A the centre being the highest part. The radii of the circle, viz., A B, A C, A D, and A E, will represent lines of steepest descent, and the arrows

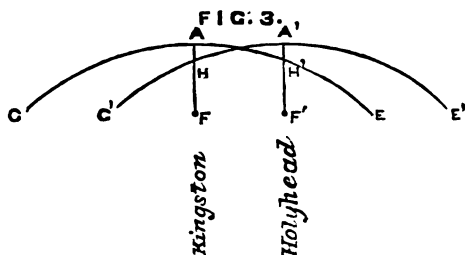


will show the direction of the wind. For in the semi-circle B C D the gradient A C being from the higher part A to the lower C, the wind deviating to the right will be southerly. Similarly it may be shown that the wind at D will be easterly, at E northerly, and at B westerly.

Now let us suppose that the wave has moved eastwards into the position occupied by the circle B¹ C¹ D¹ E¹, the centre of which is

now at A^1 . It follows that if we consider A to be position of Kingston and A^1 Holyhead, the barometer has risen at Holyhead and fallen at Kingston.

This is, perhaps, more apparent in Fig. 3, which shows a vertical section of the wave. $A F$ shows height of barometer at Kingston, and $H^1 F^1$ height at Holy-



head. But when the wave $C A E$ passes into the position $C^1 A^1 E^1$, the height of the barometer at Kingston falls from $A F$ to $H F$, whilst at Holyhead it rises from $H^1 F^1$ to $A^1 F^1$.

Similarly it might be shown that at any place traversed by the advancing semi-circle $B D E$, the barometer rises, and falls at any place traversed by $B C D$, the receding one. The diameter $B D$, at right angles to the line of progression of the centre, may be considered the crest of the wave. The nearer any place is to the line of progression, the greater will be the oscillation of the barometer, and this oscillation will diminish towards B and D .

From this diagram we may deduce the simple rule, that, standing with your back to the wind, the crest, or centre of the wave, is always on your right hand; approaching you if the barometer is rising, but receding from you if the barometer is falling.

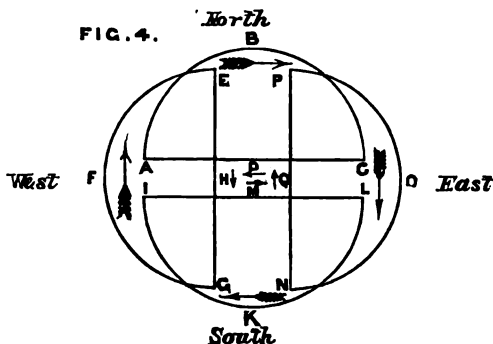
This rule, however, only holds good when there is only one such circular wave passing over the country, and as we will see hereafter that there are almost always two or more of them, it is not therefore of so much value.

Many other deductions might be made from the figure, such as the veering and backing of the wind, &c., but they are open to the same objection, so that besides the simple direction of the wind there are other circumstances which must be considered before we can determine the position of the centre of a circular wave and the direction in which it is moving.

When the gradients are mostly receding, causing the barometer to fall, the conditions are called cyclonic, but when advancing,

causing the barometer to rise, anti-cyclonic. The cyclone may be compared to a circular valley in the atmosphere, and the anti-cyclone to a circular mountain.

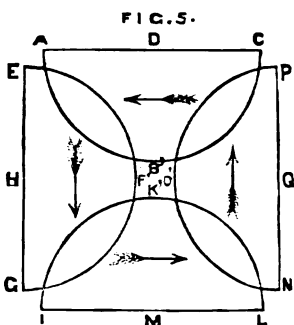
These conditions can be readily, and I think, satisfactorily, shown to be the result of two or more circular waves progressing in different directions. Fig. 4 shows how an anti-cyclone may be



produced by the action of four circular waves. In order to make it clear I have only shown one half of each wave, viz., the advancing side. The wave A B C is moving northwards, I K L southwards, E F G towards the west, and P O N towards the east; H, D, M, and Q being their respective centres. The arrows show the direction in which the wind is blowing—for in the wave A B C, the gradient being from D the centre, to B a lower level, the wind deviating to the right will be westerly. Similarly it may be shown that at O the wind will be northerly, at K easterly, and at F southerly, and this is the circulation which obtains in anti-cyclones, namely, from north through east to south and through west to north, or with watch hands. It may be noticed that the circulation in the small area enclosed by the centres D, H, M, Q, is opposite to this or against watch hands, that is cyclonic; but in all other parts of the diagram the circulation is anti-cyclonic. The gradients also are all advancing, and, of course, the barometer rising, except in the small area in the centre in which the gradients are beginning to recede, causing a slight fall of the barometer.

Fig. 5 shows how a cyclone may be produced. Let us suppose

the waves exhibited in Fig. 4 to have continued to advance in their respective directions until they have attained the positions shown in Fig. 5, D, H, M and Q being the centres, and the semicircles showing the receding side of the wave. The arrows show the direction of the wind, and the circulation is cyclonic. The gradients are all receding and the barometer falling.



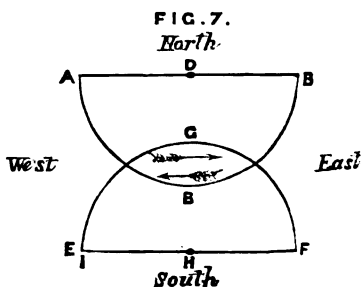
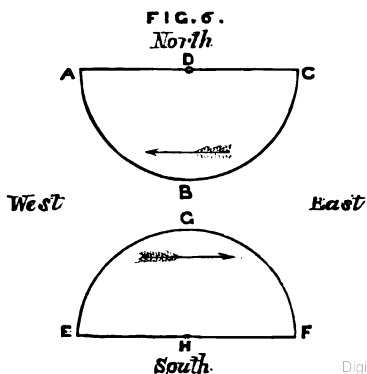
It is thus clear that an anti-cyclone may develop into a cyclone.

Although I have employed four waves to exhibit the complete circulation, I think there will seldom, if ever, be more than two or three. The wave moving westwards (E F G), is not likely to occur, and to this extent the circulation will probably be defective. In anti-cyclones the deficiency will therefore be in gradients for southerly winds, and in cyclones in gradients for northerly winds. This is caused by the fact that the general current or motion of the air over the British Islands is from west to east, and that a motion from east to west is of very rare occurrence.

All the variations in pressure and changes in the direction and force of the wind may, I think, be shown to result from the action of two or more such waves on each other, and in general two are sufficient to account for the phenomena.

The following examples will illustrate this :—

1st. The case of the barometer rising rapidly during a calm.



This phenomenon is explained in Figs. 6 and 7. A B C is the advancing half of a wave moving southwards, and E F G the advancing half of one moving northwards; D and H being the centres, and the arrows showing the direction of the winds. If we consider them to have advanced towards each other, and to be now in the position shown in Fig. 7, the barometer will clearly be rising rapidly in the area between G and B, and the winds being opposite will neutralize each other, producing a calm.

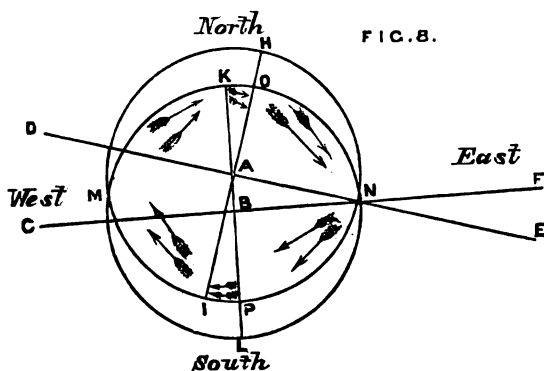
2nd. The case of the barometer falling rapidly during a calm.

The same, Fig. 7, will serve to exhibit this result. If instead of the two waves advancing, we suppose them receding from each other, then in the area G B the barometer will be falling rapidly, and the winds being still opposite, there will be a calm.

3rd. The case of a strong wind with a steady barometer or where the oscillation is slight.

4th. Ditto, with a rapidly rising barometer.

5th. Ditto, with a rapidly falling barometer.



These positions will be made plain by the above diagram. The circular wave H M I N, whose centre is A, is progressing in the line D A E and towards E, and the circular wave K M L N, whose centre is B, is progressing along the line C B F toward F. The arrows show the direction in which the wind is blowing due to each wave, and as the wind is nearly the same for both, its force will be the sum of the forces due to each wave and therefore strong.

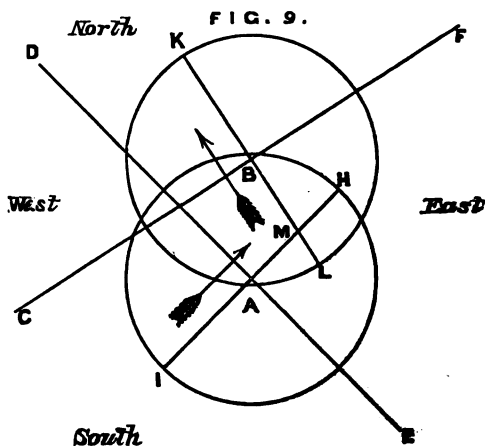
In the section K A O, the barometer will be rising owing to the advance of the wave K M L N, but falling due to the receding of the wave H M I N.

Again, in the section A I P the barometer will be rising, owing to the advance of H M I N, and falling due to the receding of K M L N. The barometer will thus in both sections remain nearly at the same height.

It is obvious that the barometer will be rising rapidly in the section O A B P N, and falling rapidly in the section K A I M, and in both sections the wind will be strong, and possibly backing and veering slightly, or in other words oscillating between two adjacent points of the compass.

It is also clear from the figure that, the barometer remaining steady or rising to the east of K A I and falling rapidly to the west of it, gradients must be very steep in the section K A I M.

6th. Fig. 9 illustrates a very common condition over these islands.



A and B are the centres of two waves travelling respectively towards E and F. Then west of B M A the barometer will be falling rapidly, with winds varying from south-west in the south to south-east in the north. Gradients will be very steep to the west of M.

It is unnecessary further to multiply examples as a sufficient number have I think been cited to prove the capability of these circular waves to explain all the conditions.

Although I have spoken of these waves as perfectly circular, it must not be inferred that they are always so. Their forms may vary, but they will always have a tendency to assume a circular form owing to their rotation.

It is important to note that this rotation when very rapid must have the effect of lowering their centres, widening their area, and rendering the gradients less steep.

GENERAL CIRCULATION OF THE ATMOSPHERE.

We must now turn to the consideration of the causes which produce the rotation and progressive movement of these circular waves, and in order to do so we must apply the foregoing principles to elucidate the general circulation of the atmosphere.

The prevailing currents of the globe are, in the tropics, a north-easterly north of the equator and a south-easterly south of that line, with a belt of calms and variable winds between them. In the north temperate and south temperate zones the currents are chiefly westerly, south-westerly in the former and north-westerly in the latter; and separated from the easterly currents by belts of calms and variables.

We thus see that there are two great easterly currents, and north and south of them two great westerly currents, each current separated from the other by a belt of calms and variable winds.

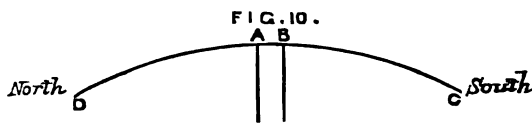
These are the broad features of the wind circulation of the atmosphere, and it will be sufficient to consider these without at present entering into the apparently abnormal circulation of the monsoons.

It is clear that, owing to the principle already enunciated, to produce the north-east trade wind there should be a gradient from north to south; its highest part should lie in the belt of calms and variables to the north of it, and it should have a motion towards the west. It is well known that it has also an oscillating movement, causing a rise and fall of the barometer twice in the 24 hours.

Again, to produce the south-west wind of the north temperate zone there should be a gradient from south to north, whose highest part should be found in the same belt of calms and variables, and

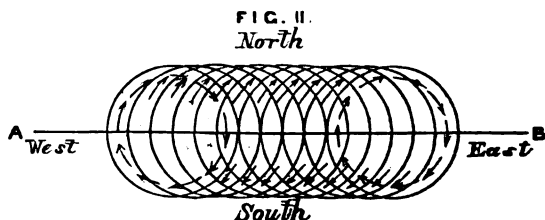
it should have a movement from west to east. It also has a slight oscillating movement twice in the 24 hours.

These two gradients are the two sides of an elongated wave, a vertical section of which running north and south may be shown thus—



A B, belt of calms and variables ; A D, region of south-west wind ; and B C, region of north-east wind.

This elongated wave may be supposed to consist of a great number of circular waves, as exhibited in Fig. 11.

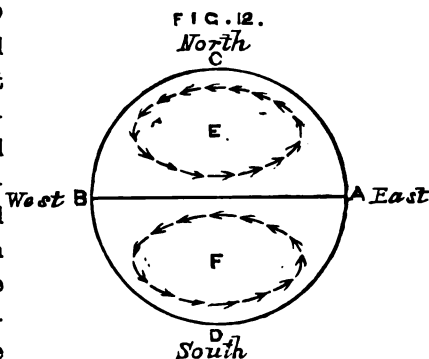


The centres lie along the line A B which is situated in the belt of calms and variables. It will be observed that there are gradients for north-westerly winds in the north, and for south-easterly winds in the south, and these winds may possibly blow in the upper region of the atmosphere while the north-easterly and south-westerly prevail below. At the ends I have attempted showing how the circulation may be completed.

In the same manner it might be shown that south of the equator there is an elongated wave or series of circular waves, whose general motion is from east to west on its north side, and from west to east on its south side, and whose centre, or numerous centres, lie along the belt of calms and variables separating the south-east trades from the north-west winds of the south temperate zone.

A simple experiment will make clear this general circulation.

If in a basin A B C D (Fig. 12), partially filled with water, some sawdust be sprinkled on the surface, and a cylindrical piece of wood be immersed in the water and moved repeatedly from A to B and always in the same direction, the circulation of the water will be as shown by the arrows.



It will be noticed that the sawdust which falls to the bottom collects there in two heaps about the position E and F, and also rotates with the arrows.

Let A B represent the equator, then the circulation north of it is with watch hands, and south of it against watch hands, as we have already seen, obtains in the atmosphere.

We may also observe that north and south of A B the larger particles of sawdust rotate in the same way as the general current.

It is thus apparent that the circular waves must rotate in a similar manner.

To complete the general circulation we should expect to find a circular wave in the arctic circle, and another in the antarctic, with their centres near the Poles, and with north-easterly wind in the former and south-easterly in the latter.

We thus see that a westerly current prevails over the area of the British Islands, and therefore that the progressive motion of these circular areas of high pressure will be generally from west to east, and that their rotatory movement will be with watch hands.

If at any time, however, the skirts of the easterly current within the arctic circle should come over any part of these islands, it is obvious that then we might have a movement from the east.

The great gradient which gives the south-westerly winds of the north temperate zone, moves northwards with the sun from

December to June, and towards the south from June to December. It is plain that during the summer we will be nearer the top of the gradient, and there the winds are usually light, whilst in winter we will be near the bottom and there the winds are usually strong.

We have now accounted for the general progressive movement and rotation of these circular waves, and we have seen that these are due to the general circulation, but we have not yet shown how they originate, nor why they are constantly moving in ever-varying directions, north and south, nor the causes of the general circulation. That must be reserved for a future communication.

THE CURRENTS OR TENDENCY OF THE AIR OVER THE BRITISH ISLANDS
FOR THE MONTH OF NOVEMBER, 1878.

Date.	Time during which Current prevails.	Force from		General Direction from	Duration.	Force from		General Direction from
Nov.		S.	W.			N.	W.	
1	0 h.m. to 11 h.m.	8	10	W. by S.	11 m. to midnight	4	2	W. by N.
2	0 m. " 10 m.	10	8	W.S.W.	10 m. " 1 next m.	5	1	W.N.W.
3	1 m. " 9 m.	10	6	"	9 m. " 2 "	5	1	"
4	2 m. " 8 m.	10	4	S.W.	8 m. " 2 "	5	1	N.W.
5	2 m. " 7 m.	10	2	"	7 m. " 3 "	5	1	"
6	3 m. " 8 m.	11	1	"	8 m. " 4 "	5	1	"
7	4 m. " 10 m.	10	2	W.S.W.	10 m. " 4 "	5	1	W.N.W.
8	4 m. " noon	9	4	"	Noon " 6 "	4	2	"
9	6 m. " 3 a.	8	6	W. by S.	3 a. " 6 "	4	2	W. by N.
10	6 m. " 6 a.	6	8	"	6 a. " 6 "	3	4	"
11	6 m. " 6 a.	4	9	"	6 a. " 7 "	2	4	"
12	7 m. " 6 a.	2	10	"	6 a. " 8 "	1	5	"
13	7 a. to 9 fol. m.	1	5	"	8 m. " 7 a.	1	10	"
14	8 a. " 10 "	1	5	"	9 m. " 8 a.	2	8	"
15	9 a. " 9 "	2	4	"	10 m. " 9 a.	5	6	"
16	10 a. " 8 "	2	4	W.S.W.	9 m. " 10 a.	7	4	W.N.W.
17	11 a. " 7 "	3	3	"	8 m. " 11 a.	9	2	"
18	... " ...	...	...	...	7 m. " midnight	11	2	N.W.
19	0 m. to 9 m.	4	2	S.W.	9 m. " 1 next m.	13	1	"
20	1 m. " 9 m.	4	2	"	9 m. " 2 "	13	1	"
21	2 m. " 9 m.	5	1	W.S.W.	9 m. " 2 "	13	1	"
22	2 m. " noon	5	1	"	Noon " 3 "	12	1	W.N.W.
23	3 m. " 3 a.	5	1	W. by S.	3 a. " 4 "	11	2	"
24	4 m. " 6 a.	4	2	"	6 a. " 5 "	6	8	W. by N.
25	5 m. " 7 a.	2	4	"	7 a. " 6 "	8	10	"
26	8 a. to 8 next m.	1	10	"	7 m. " 8 a.	4	5	"
27	9 a. " 9 "	4	9	"	8 m. " 9 a.	4	5	"
28	10 a. " 8 "	7	8	"	9 m. " 10 a.	4	2	"
29	11 a. " 7 "	9	4	W.S.W.	8 m. " 11 a.	6	1	W.N.W.
30	11 a. " 5 "	10	2	"	7 m. " 11 a.	5	1	"

REMARKS.

M. stands for morning or from 0 h. A.M. to noon.

A. stands for afternoon or from noon to midnight.

The numbers show the comparative force of the tendency of the air from N., north, S., south, and W., west.

1. From the 1st November to the 9th or 10th, the air has a strong tendency from the south, and during the period there should be an increase of temperature.

2. From the 16th to the 25th, the air should have a strong tendency from the north, accompanied by a decrease of temperature.

3. From the 10th to the 16th, the tendency is strongly from the west, and also from the 25th to the 28th.

4. From the 28th to the 30th, the tendency is strong from the south.

5. The general direction shows how the circular waves may be expected to travel.

6. If during period of strong southerly tendency, and with winds in the south, the barometer rises rapidly with a lower temperature, expect storm after it begins to fall.

7. On the other hand, if during a period of strong northerly tendency, with winds from the north, the barometer rises rapidly with an increase of temperature, expect storm after first fall of barometer.

In both cases the storm will likely prove a serious one.

8. The times shown will vary slightly according to the latitude and longitude of the place.

9. Normal condition of fine weather :—

During strong north tendency :—Northerly winds and decreasing temperature.

During strong south tendency :—Southerly winds and increasing temperature.

CHATHAM ISLANDS IN THE SOUTH PACIFIC.

IN April, 1791, Vancouver took his departure from England in the sloop-of-war *Discovery*, bound on a voyage to the Pacific Ocean and round the world. He was accompanied by Lieutenant W. R. Broughton, in command of the tender *Chatham*. The Cape of Good Hope, New Holland, and New Zealand having been visited in succession, a new departure was taken, when, on the 23rd of November, the separation of the two vessels was occasioned by unavoidable circumstances during a very heavy and violent storm. "As some recompense for the anxiety caused by this separation," so writes Vancouver at a subsequent date, "we had to reflect that eventually the gale had been the fortunate means of our making

some additions to geography." One result was the discovery of Chatham Island, as thus narrated by Broughton :—

"Early on the morning of the 29th, low land was discovered, bearing by compass N.E. to E.N.E. ; and being then in 40 fathoms water, we brought to until daybreak. About 4 o'clock we had 38 fathoms, sandy and broken shelly bottom, when the N.W. point of this land, which is low, bore by compass S. 7° E. about 3 leagues distant, and which, after the man who fortunately saw it from the fore yard, I named Point Alison ; a remarkably rugged rocky mountain, that obtained the name of Mount Patterson, bore S. 60° E. ; a sugar-loaf hill S. 84° E. ; and the extreme point to the eastward, which formed an abrupt cape, N. 75° E. ; two islands N. 3° E. to N. 5° E., 2 or 3 leagues distant. The interior land was of moderate height, rising gradually, and forming several peaked hills, which, at a distance, have the appearance of islands. From Point Alison to Mount Patterson the shore is low, and covered with wood ; from thence to the above cape was a continued white beach, on which some sandy cliffs and black rocks were interspersed, apparently detached from the shore. To the eastward of these rocks, between them and a flat projecting point, the land seemed to form a bay open to the westward. From this point to the above cape, a distance of about 2 miles, the cliffs are covered with wood and coarse grass. These cliffs are of moderate height, composed of a reddish clay, mixed with black rocks. Several large black rocks lie off Point Alison and the cape, extending a little distance ; and as we passed within about half-a-mile of the shore, the depth of water was 14 fathoms, broken shells and sandy bottom. This cape forms a conspicuous headland, and is the northernmost part of the island ; I called it Cape Young. The above two islands lie very near each other ; to the eastward of them lies a small rock, apparently connected, though at no great distance, by a reef ; another rock, somewhat larger, is situated between them. They are of no great height, flat topped with perpendicular sides, composed entirely of rocks, and much frequented by birds of different kinds. These, from their resemblance to each other, I called the Two Sisters. We steered from Cape Young E. by N., keeping between 2 and 3

miles from the coast, with regular soundings from 25 to 22 fathoms. The shore is a continued white sandy beach, on which the surf ran very high. Some high land, rising gradually from the beach and covered with wood, extends about 4 miles to the eastward of the cape. After passing this land, we opened the several hills over the low land we had seen in the morning, and could discern that many of them were covered like our heaths in England, but destitute of trees. The beach is interrupted at unequal distances by projecting rocky points covered with wood. Over the banks of sand were seen a range of retired hills at a considerable distance, in the direction of the coast. After sailing about 10 leagues we came abreast of a small sandy bay. Water was seen over the beach, and the country had the appearance of being very pleasant. I worked up into the bay, and came to an anchor about a mile from the shore in 20 fathoms water, sandy and rocky bottom; the eastern point from our anchorage proved to be the termination of the island, to which I gave the name of Point Munnings. . . . Having reached the shore (of the bay) without any interruption, we displayed the Union flag, turned a turf, and took possession of the island; which I named Chatham Island (in honour of the Earl of Chatham), in the name of His Majesty King George III."

Broughton's stay only lasted a day, owing to a misunderstanding with the natives, which resulted in one of them being unintentionally killed. Broughton continues: "On our return to the vessel we got under weigh. About six in the evening, on passing Point Munnings, which is the N.E. extremity of the island, it was seen to be a low peninsula, over which, from the mast-head, was discovered more land to the southward, but the weather became so very hazy that it was impossible to discern how far it extended in that direction. From the bay, which I called Skirmish Bay, to Point Munnings, the shore is low, rocky, and clothed with wood. Some rocks lie a little way off the Point."

Such is the narrative of the first European who visited the northernmost island of the group. The natives were like those of New Zealand, and are described by Broughton as a cheerful race, full of mirth and laughter, dressed in sealskins or mats, and courageous enough to resist his landing. By degrees the islands

became the resort of whalers and sealers, who appear to have been received with a hearty welcome, and several whaling stations were established on different parts of the coast. In those early days the natives were numerous (about 1,200) and healthy; but a change was occasioned by the importation of a large number of New Zealanders brought thither by an European ship. The result was an internecine war in which most of the original natives were destroyed, and the few that remained were reduced to slavery and degradation. From the period of the discovery of the islands they had never been settled or colonized; but in 1840, after the purchase of land in New Zealand by the New Zealand Company, was suddenly terminated in consequence of a proclamation of the Governor, the barque *Cuba* was despatched thither, in order to purchase from the Chatham Island chiefs, as they were not included within the limits specified in the proclamation. This was done by Mr. Hanson, the agent of the Company; but no further progress was made, and the Chatham Islands are now under the Colonial Government of New Zealand.

The first chart of the islands was derived from a plan by Lieut. Fournier, of the *Heroine*, and a sketch by Mr. C. Heaphy, draftsman to the New Zealand Company. But that may now be considered to be superseded by the survey of Mr. S. Percy Smith, Chief of the New Zealand Survey Department, in 1868, a reduced copy of which, through the kindness of Messrs. Imray and Son (Chart Publishers in the Minories), accompanies this article.* The vicinity of the Chatham Islands has never been more than incidentally examined by our cruisers—notably, however, by Capt. C. W. Hope, of H.M.S. *Brisk*, in 1865, who found the chart of that date very imperfect and erroneous, especially as regarded the southern portion of the group. Dr. Ernest Dieffenbach, Naturalist to the New Zealand Company, described the islands in a paper which was printed, in 1841, in Vol. XI. of the *Journal of the Royal Geographical Society*. It is from these and other sources that this memoir has been compiled, and the older accounts rectified by the later survey.

* For Chart see Frontispiece.

Broughton placed the Chatham Islands 15' to 18' too far to the westward, and later assigned positions have been from 8' to 13' too far in the same direction, since, by observations made by the United States Transit of Venus party, in December, 1874, the longitude of Whanga-roa Harbour was found to be $176^{\circ} 39' 49.5''$ W.

The whole group consists of two large islands and several islets, of various dimensions; the larger and northern island, called by the natives Ware-kauri, is the Chatham Island of Broughton; the smaller and southern one is Rangiauria or Pitt Island, which has in its immediate vicinity Rangatira and Mangere, besides many islets that are merely rocks. There are also the rocky islets of Rangitutahi (the Two Sisters of Broughton), 11 miles north-westward of the northernmost point of the north island; Motuhara, a group of islets $21\frac{1}{2}$ miles eastward of the nearest land; Motuhope and Ahuru, each with an encircling reef; Tarakoikoia, a pyramidal rock, and the southernmost of the outlying islets; nor must it be forgotten that there are several outlying reefs, each of which constitutes a danger when approaching the group.

WARE-KAURI, the northern island, lies between lat. $43^{\circ} 41\frac{1}{2}'$ and $44^{\circ} 7\frac{1}{2}'$ S., and between long. $176^{\circ} 7'$ and $176^{\circ} 51'$ W. Cape Young, the northernmost point, being in lat. $43^{\circ} 41\frac{1}{2}'$ S., long. $176^{\circ} 35'$ W. It is of very irregular shape, most nearly resembling that of a dumb-bell; its northern side, in a direct line from point to point, is 31 miles in extent, W.S.W. and E.N.E.; its southern end does not exceed $15\frac{1}{2}$ miles at the widest part, while there is an intervening space where the distance from shore to shore (across the island) is not more than $5\frac{1}{2}$ miles.

The *western side* of the island, where ships coming from New Zealand will generally first make the land, stretches in a semi-circle, so as to form a deep bay, known as Petre Bay, 13 miles wide at the opening between Maruwaka (or Somes) Point on the north, and Point Durham on the south, and extending 10 miles inwards. The land has here an undulating surface of small elevation, and is over-reached to north and north-west by higher insulated hills, which have either regular pyramidal forms or are irregular and massive in shape. With the exception of two hillocks at the S.W. point of the island, no hills are visible in that

direction, but the land rises gradually from the shore, which is rocky, and clothed with verdure to the water's edge, and, at the top of the slope, spreads out either level or undulating. On advancing towards the inner part of Petre Bay a *red bluff* becomes visible, which forms the northern headland of a smaller bay (and inlet) within the larger one, the southern head of which is a bluff of the same description. The distance between the bluffs is nearly 8 miles, and the beach between them is sandy, and bordered by low hills. This small bay has a very regular semi-circular form, and behind the southern bluff is the principal harbour—*Port Waitangi*. From the northern bluff the beach becomes again sandy for some miles, and afterwards rocky, which it continues to the N.W. point of the island; being indented by four small inlets, three of which are close together on the north side of Petre Bay, and the fourth nearer the west point of the island.

The *northern side* of the island forms in several wide, open bays; to the westward the shore is flat, and the headlands run out in long, wooded tongues of land. Between Point Alison and Cape Young there is a group of irregular hills, which terminates in a rocky precipice towards the sea, from the foot of which runs out a spit with a level beach (Cape Patterson), and which is fronted seaward for some distance by rocks under water. The hills are called Maunga-nui (high mountain), although they are of very inconsiderable elevation. This spit forms the western termination of an open bay stretching about 11 miles along the coast. Its eastern boundary is a headland, terminating in a hilly promontory (Cape Young), the sides of which are steep, or perpendicular. The shore between consists generally of sand hills, which are wooded to a short distance inland, and are either shelving or cut down into cliffs by the action of the waves; in the middle of this bight four needle-shaped rocks lie off the shore, from which they are distant about a cable's length. The beach itself consists of fine sand. On the other side of Cape Young the shore retreats again, and runs for about 16 to 18 miles to the eastward with a broad beach and low-wooded hills. Although the beach is sandy, rocks, spread along the shore, are left uncovered by the sea at low water; this beach is terminated by a long point,

behind which, $3\frac{1}{2}$ miles from the east end of the island, is a small bay, Kainga-roa (Skirmish Bay of Broughton), with an entrance partly obstructed by rocks. The N.E. end of the island (Point Munnings) is extremely rocky, and its outermost point is formed by an island, or rather a peninsula, called Wakuru, as the channel which separates it from the main shore is dry at low water. A wide shelf of reef and rocks stretches two miles or more to the eastward of this part of the island. This description of the north coast coincides well with that given by Broughton.

The coast continues to be rocky on the *eastern side* of the island, when it again forms an exposed bay nearly three miles wide, enclosed by a broad sandy beach and low-wooded hills; rocks, most of them only visible at low water, are everywhere scattered along the shore and a mile or more seaward, and, with easterly winds, a heavy surf and high breakers roll over them for several miles from the land. The southern head of this beach, Owaka, or Waikerri Point, is perfectly rocky, and fronted with an outlying reef. Thence a long, deep bay, Hanson Bay, extends to the S.E. point of the island; sand hills are thrown up along the coast, and stunted shrubs cover them on the weather side; along the coast of the bay are many rocks, and a heavy surf rolls on the beach. The S.E. point is formed by a hilly promontory, covered with wood; it is called Tupouranga, or Cape Fournier, and has off it several shoal spots, which extend nearly 2 miles seaward. The distance between the N.E. and S.E. points is 20 miles in a straight line, but many more along the coast.

The *southern shore* is abrupt and precipitous, and there may be isolated rocks off it, but none more than a mile distant; the land on the summit of the cliffs is level, and covered with trees. Small streamlets trickle down the cliffs, and clothe their face with herbage. The S.W. point is Cape l'Eveque, which has close behind it a remarkable hill with a cleft rock on the top, nearly like a bishop's mitre, whence the name given it. From Cape l'Eveque to Cape Durham (the southern point of Petre Bay) the coast is high, bold, and apparently clear of danger.

Although the island has been spoken of as mountainous in parts, it is in reality only hilly, as none of the heights attain an elevation

of 1,000 feet, and most of them are less than 800 feet. Here and there the hills are isolated and pyramidal, others have a more irregular shape; chains of hills are also separated by ravines, and terminate, as to their seaward face, in perpendicular cliffs; otherwise a steep declivity may be separated from the sea by a flat beach $1\frac{1}{2}$ to 2 miles in breadth. All these hills have had a volcanic origin, and are formed of either dense and firm, or cellular, basalt.

Geologically speaking the basis of the island is a stratified green slate of very firm texture, containing much quartz; next comes a conglomerate, sometimes argillaceous, and at others the calcareous constituents prevail; dykes of basaltic lava traverse these two rocks in all directions. There are besides, a dark green friable sand, a horizontal bed of broken and decomposed shells, and a calcareous breccia; these beds are generally thin, and alternate with each other. Superimposed on these, the land, where low and undulating, is generally marshy, if not boggy; there is much peat; and trunks of trees in the state of lignite abound. The soil is exceedingly rich and vigorous, being formed of decomposed volcanic rock and decayed vegetation. In 1840, it was reported that the soil had been set on fire by some cause or other, and was burning slowly beneath the surface, as is the case occasionally with a coal mine.

The streams and rivulets are numerous in every direction, and the water, though often dark, if not black, from passing through boggy land, is said to be excellent for all purposes. The Mangehau, the principal stream which flows into Waitangi Bay, has many tributaries, one of which flows from lake Huro; there is a bar at the mouth, which is passable by a boat only at high water; but beyond the bar the stream is navigable for about 8 miles even at low water, as its depth is often 12 feet, though its channel is narrow; afterwards it becomes a mere rivulet.

A remarkable feature are the lakes or lagoons. There are several at the N.E. end of the island, and another at the back of the Waitangi beach; they are generally in the midst of low and slightly wooded hills, are from 2 to 6 miles in circumference, with streams running into them, and with an outlet to the sea. But the

largest is the Te Whanga lagoon, which is brackish, and being (owing to a bend in it) 17 miles long and 2 to 4½ miles wide, it occupies a very large part of the whole island; on its west and south sides, it is surrounded by hills either wooded or boggy; on its eastern side it is separated from the sea by low sand-hills about 100 yards wide; at one place the intervening hills disappear, and between the lagoon and the sea there is only a low sandy beach; the level of the water is about 2 feet above high water mark, and the sea never encroaches on it; the brackishness of the water arises probably from infiltration, as it is supplied by several large streams which would otherwise make its water fresh. The lagoon, after a very wet season, has been known to break over its low seaward barriers, and empty its surplus waters; on such occasions the south end has been left dry for several miles.

Sailing Directions for Ware-kauri or Great Chatham Island.—These are chiefly derived from the cruise of H.M.S. *Brisk*, 1865.

Making the Land.—On making the Great Chatham Island from the westward, mount Maunganui is very conspicuous, being a high rugged hill with a broken irregular outline, appearing to form the north extreme of land; but on approaching nearer, Patterson Point, a long low projection, off which there are *dangerous reefs extending a mile or more*, will be recognised. Mount Dieffenbach will be seen to the right of Maunganui, which is a sharp pointed pyramidal hill, said to be the highest on the island, but Maunganui looks higher. There are other peaks resembling Dieffenbach, but lower.

CUBA CHANNEL.—The *Brisk* approached Alison Point on an east course, and then passed through Cuba Channel into Petre Bay. The coast from Alison Point to Maruwaka (or Somes Point) appears fringed with rocks, and should not be approached nearer than a mile. The sea breaking on Western Reef may be seen 8 or 10 miles off from the masthead, and on closing nearer patches of the reef are visible above water. The reef seems to extend somewhat farther in a N.W. direction from the dry part than is laid down. There is, however, a channel at least 2½ miles wide between the reef and Somes Point, through which steaming at half speed no bottom could be obtained with 10 fathoms, and there were no indications of any other dangers.

WESTERN REEF.—The position and extent of this reef are still considered to be uncertain; it consists of rocks, and a long reef that uncovers in parts, and was once a favourite resort of seals. It stretches over 4 miles in a N.E. and S.W. direction, and then trends 3 miles to eastward, leaving a channel $2\frac{1}{2}$ miles between it and Maruwaka Point; its south end is $7\frac{1}{2}$ to 8 miles S.W. from that point.

PETRE BAY.—The only anchorages to be recommended in Petre Bay, are Wanga-roa or Port Hutt, and Port Waitangi, the other bays on the north side being exposed to south and S.W. winds. On steaming along the southern shore of Petre Bay nothing was seen of the Heaphy shoal, and it was stated that it had no existence. There was a heavy swell running, but no appearance of a break anywhere off this shore, except upon the Jenny reef, which appears to be rather less in extent than the chart shows.

PORT WHANGA-ROA is sheltered from all winds, but is very confined, and as with strong west and south-west winds there is a heavy sea at the entrance, a vessel should anchor as far in as possible. The entrance may be easily recognised by the sketch on the chart, and the harbour is nowhere more than 3 cables wide. With the nib or hummock on mount Iwa-kawa open to the eastward of Maunganui, the harbour is open, and the white sandy beach at its head will be seen. There are likewise sandy beaches at the head of the two bays to the eastward of Whanga-roa, therefore care must be taken not to mistake between them.

The sea breaking on the rocks on either side of the entrance to Whanga-roa marks the dangers, and it is only necessary to keep midway between and steer straight in on a N.W. by W. course. A patch of floating kelp stretches partly across the entrance from Napper reef, but there is deep water where it lies, and the *Brisk* passed through it. The reef off Gordon Point must be avoided, but the outer edge of the kelp there marks the deep water.

The *Brisk* anchored inside the line from Gordon Point to Evans Point in five fathoms, coarse sand and shells, with the centre of the little cove behind Evans Point bearing N.E. A large vessel should moor, if intending to stay any time, as there is scarcely room at single anchor to swing all round unless the anchor were

dropped exactly in the centre of the harbour. There is a stream of excellent water at the north-west corner of the harbour, but no fire-wood or supplies of any kind are to be had here, the country for miles round being bleak open moorland, intersected by small lakes and swamps. The only habitations are two Maori huts on the west side at Howard Bay. (H.M.S. *Brisk*, 1865.)

The U.S. Transit of Venus party were stationed in Whanga-roa, and speak well of it as being most sheltered, with rocky but tolerably good holding ground. Fresh water was easily obtained, also wood for fuel. Mutton and beef were procured, but vegetables were scarce. Vessels can be furnished with fresh provisions by a German resident there. The prevailing winds in December were westerly. The rocks in the vicinity of the Chatham Islands are generally marked by kelp. There are two high and two low waters in a lunar day; high water full and change about 5 h.; mean rise and fall $2\frac{1}{2}$ feet. (1874.)

The two ports eastward of Whanga-roa are Whanga-moe and Whanga-tete, and perhaps offer the same advantages, but there is nothing particular to recommend them. All have the same shape.

The bay 3 to 4 miles westward of Whanga-roa is *Poukauta*, or *Ocean Bay*. The land around it is richer and more cultivated than that to the eastward. It was formerly the principal resort of vessels in quest of seals, and, as a large French whaler was captured here by the natives, it evidently has anchorage.

PORT WAITANGI is the principal place in the Chatham Islands. The resident magistrate lives here, as also several other Europeans. Fresh meat, poultry, and vegetables may be obtained in abundance, and very cheap; the potatoes, for which these islands are celebrated, are very fine, and at times a large quantity is exported to New Zealand and Australia. The land in the neighbourhood is excellent, and the richest on the island; wheat is cultivated, and answers well, and all kinds of English fruits and vegetables come to perfection. The lakes abound with wild ducks, and there are also curlew, plover, and pigeons; with abundance of wild pigs all over the island.

The Anchorage of Port Waitangi is not a safe one for large vessels during westerly gales. Vessels drawing not more than 12

or 18 feet may ride out S.W. gales by anchoring close in with Hanson Point bearing S.W. or S.W. by W.; they will then be in a measure sheltered from the heavy sea, but will experience a rolling swell that will try their cables.

With a gale from N.W. this is decidedly a dangerous anchorage. The *Brisk* experienced a heavy S.W. gale while at anchor here in May, 1865, with Clatchie Point bearing W.S.W. in 6 fathoms, fine black sand. The gale lasted 48 hours; one cable parted, and the vessel was in a very critical position, a high breaking sea running, and a strong offset from the shore keeping the ship at times broadside to wind and sea. An American whaler lying farther in also parted a cable, and the crew left her, expecting to be wrecked, but she rode it out safely, as did also a schooner lying close under Hanson Point. (H.M.S. *Brisk*.)

The soundings are marked on the chart. Spring tides are said to rise 6 feet, but they are irregular both as regards time and height.

A *Shoal Patch* having 5 fathoms on it is said to lie $1\frac{1}{2}$ miles to the northward of the anchorage, but the exact spot is uncertain. It is however known to the natives who go there to fish. It is nearly opposite to the Red Bluff (perhaps a little southerly).

When approaching Port Waitangi be careful to avoid the Clatchie reef, which extends a cable from the point; the shore thence to Hanson Point is fringed by a narrow reef.

There is no anchorage off the coast between Point Durham and Cape l'Eveque, the S.W. point of Ware-kauri; the same remarks apply to the whole of the southern coast between Cape l'Eveque and Tupouranga (Cape Fournier), but some rocks appear to be marked here and there a mile from this shore.

The northern coast of Ware-kauri is much exposed, and is merely an open roadstead. But about 3 to 4 miles from the N.E. point is KAINGA-ROA, the Skirmish Bay of Broughton; it is two-thirds of a mile wide at entrance, and trends inwards half a mile; the eastern and western points of this inlet are rocky, and are terminated by spits and rocks, over which breakers are continually seen; the rocks above water, off the western point, extend to the middle of the entrance, and the navigable channel is thus narrowed to 2 or $2\frac{1}{2}$ cables, if so much. The depth in the channel

is given as 9 to 10 fathoms, and it is said that under the western point and reef, where there seems to be the best anchorage, there would be shelter from all winds; an outlying sunken rock (the Lure) lies N.N. Westward, half a mile from the west point; there no survey of this inlet.

The eastern shore has been frequented by whalers and trading vessels; the best anchorages are about 4 to 6 miles from the N.E. extremity, where a boat can land at all times, and where the hilly foreland offers some protection, but easterly winds often set in very suddenly.

RANGI-TUTAHU, the *Two Sisters* of Broughton, lie N.W. by W. $\frac{1}{2}$ W. 11 miles from Cape Young, in lat. $43^{\circ} 33\frac{1}{2}'$ S., long. $176^{\circ} 46'$ W. They are two small rocky islets, close to each other, about 100 feet high, flat-topped, with steep sides, covered with scanty brushwood, and are much frequented by birds; there are breakers around them, and it has been said that a long line of breakers stretches 5 miles N.W. by W. from the islets towards the *North-West Reef* in lat. $43^{\circ} 30'$ S. These are the only known dangers immediately northward of the Chatham Islands.

PITT STRAIT.—H.M.S. *Brisk* passed about $1\frac{1}{2}$ miles to the northward of the *Sentry reef*, which lies in lat. $44^{\circ} 12'$ S., long $176^{\circ} 32\frac{1}{2}'$ W.; it is smaller in extent than was formerly laid down on the charts, and is entirely under water, but the sea breaks violently upon it.

There is said to be a rock some little distance from the shore, 2 or 3 miles westward of Cape Fournier, but it is out of the ordinary track of vessels passing through Pitt Strait, and nothing was seen of it. The residents stated that, with the exception of this rock and *Sentry reef*, Pitt Strait is entirely free from danger, the rocks lying off the west and south-west sides of Pitt Island being so high and steep as to be quite undeserving that name.

Pitt Island and its surrounding islets and rocks have hitherto been most incorrectly laid down on the Chart.

RANGIAURIA or Pitt Island, is the southern island of the Chatham group and is separated from Ware-kauri by Pitt Channel which, in its narrowest part at the eastern end, is 11 miles wide. The island is 8 miles long N. by W. and S. by E., and varies in breadth from

1½ or 2 to 3½ and 4 miles. Its north point is in lat. 44° 18' S., long 176° 11' W.; and its south point in lat. 44° 21½ S., long. 176° 12' W. It consists principally of a mountain of moderate height with a flat summit, and its sides extend nearly to the coast; it has no harbour.

The north-west end of the island forms a bay about 1½ to 2 miles wide and half a mile deep, where there is good anchorage with all southerly winds. From the centre of this bay Eveque Point bore W. ¾ N. and Cape Fournier N.W. by N. Mr. Hunt, an Englishman, who has resided for many years on the island, lives in this bay; he farms a great portion of the island, and gains his livelihood by supplying whalers with fresh provisions of all sorts. He also acts as pilot to them.

On the west side of Rangiauria is WAIHERE BAY, formed by a deep indentation of the coast; here is good anchorage with northerly and easterly winds behind Mangere, a small, flat-topped island, 300 to 400 feet high, with perpendicular sides. Within a distance of two miles, in a S.Westerly direction from Mangere, are three small islets; one is the Fort, and another the Castle, a remarkably sharp-pointed serrated rock; but, beyond these, the outermost rock of this group lies nearly six miles from the nearest point of Rangiauria, and is called the *Sail rock* from its extraordinary resemblance to a boat with a gigantic lug sail.

From the extreme south point of Rangiauria several rocks (awash) extend 1½ miles in a southerly direction, terminating in the South reef; here are also four or five isolated and conspicuous rocks, the outermost of which (Round rock) lies about W.S.W., distant 3¼ miles from the point.

On the east side of Rangiauria there is an anchorage much frequented by whalers, where vessels may ride well sheltered from westerly gales. The North-East reef lies 1½ miles from the easternmost point of the island.

Supplies.—Abundance of fresh meat, potatoes, and vegetables may be obtained at Rangiauria, as also poultry, milk, and butter. The island is thickly wooded; the soil very fertile, and, as at Ware-kauri all kinds of European fruits, &c., grow and thrive. Wheat is also cultivated.

RANGATIRA, or the South-East island, is small, but 678 feet high ; it lies rather more than a mile from Rangiauria, and its north side is near the parallel of $44^{\circ} 20' S.$; there is a rock off its north side ; and Passage rock lies in the channel between the two islands, but apparently nearer to Rangiauria. The chart shows the various rocks and dangers in the vicinity of the islands.

TARAKOIKOIA is the southernmost islet of the Chatham group ; being small, but 566 feet high, it is known as the Pyramid ; it lies $4\frac{1}{2}$ miles southward of Rangiauria, in lat. $44^{\circ} 25\frac{1}{2}' S.$, long. $176^{\circ} 12' W.$

Fancy rock, which is very low, lies 5 miles N.E. by N. from Tarakoikoia, and about $1\frac{2}{3}$ miles south-eastward from Rangatira.

About $3\frac{1}{2}$ miles eastward of Rangatira the *William Hamilton reef* has been reported, but the position is doubtful.

MOTUHOPE is an island with some rocks and a reef of some extent around it ; the rock lies E. by N. $\frac{1}{2}$ N. 9 miles from the northern extreme of Rangiauria ; it may be the Round Island reported by H.M.S. *Brisk*, to be placed about 4 miles too far to N.W.

AHURU, on the parallel of $44^{\circ} 20' S.$, about 13 miles eastward of Rangatira, and $17\frac{1}{2}$ miles from Tarakoikoia, may be the Star Key Reef marked by high breakers ; it consists of several small rocks and a reef the principal direction of which appears to be north and south, and $1\frac{1}{2}$ miles in extent.

Note.—It may be that Motuhope is the Star Key reef and connected to Round island ; and Ahuru the Eastern reef ; but there is some uncertainty about this.

BERTIER ROCKS lie east and west, and consist of one large flat-topped islet about 150 feet high, close to which are four smaller rocks. They are distant from Tupouranga (Cape Fournier), in the greater Chatham, nearly 22 miles in a N.E. by E. $\frac{1}{2}$ E. direction, and being situated near the 44th parallel, they have obtained the local name of the *Forty-fours*. Their approximate position is lat. $48^{\circ} 57\frac{1}{2}' S.$, and long. $175^{\circ} 47\frac{1}{2}' W.$

There are about 150 white inhabitants on the Chatham Islands, chiefly English and Germans, whose occupation is that of sheep-raising ; but almost every European nation is represented, being

sailors left there by whalers ; there are also Marioris (natives), Maories, Kanakas, Negroes, Chinese, &c.

The climate is exceedingly temperate, being neither very hot, nor very cold ; and there is no want of rain. The animal and vegetable life is similar to that of New Zealand, but not so abundant and rich in species. All kinds of European fruits and vegetables will grow. Fish, lobsters, crayfish, and various molluscs abound off the shores ; but whales and seals are now very much more scarce than formerly.

Vancouver in the *Discovery* passed about 20 leagues north of the Chatham Islands ; as did Cook in March, 1777, who also passed about the same distance to the southward in June, 1778.

The islands are 875 miles from the nearest point of New Zealand.

CORRESPONDENCE.

ALTERATION OF LEADING LIGHTS.

To the Editor of the "Nautical Magazine."

DEAR SIR,—For many years past I have been a constant reader of your Magazine, the usual contents of which I consider invaluable, but to the present time have been contented with being a reader only, considering that abler pens than mine were in constant correspondence with you. What I have to write about now, however, I have not seen mentioned by any of your numerous correspondents, and is a subject of, I consider, considerable importance, which only requires to be mentioned to be corrected, viz., the continual and erratic alteration of leading lights in various parts of the world, but especially on our own coasts. To explain what I mean, I may state that I joined my present ship in October of last year ; a new ship, and thoroughly found in every requisite for safe navigation, as far as it was possible for the owner so to do. Charts, instruments, and books to the latest date ; in fact, all that the most exacting could desire. Going down Channel—hazy weather—I was looking anxiously for Galley Head light, which I remembered had been lit, and for the purpose referred to my charts, but no statement of any light at that place was mentioned.

I then referred to the Light List, and found it was the list for the year 1877. Against Galley Head I find that it is a white light, characteristics not mentioned, and a note in the margin saying, "will probably be lighted in 1876." Again this year, along the same coast, my old friend the Coningbeg has been altered with only a three months' notice.

These are two cases in point, but as a fact in various parts of the world many dozens of lights are being continually altered and without sufficient notice to the navigator. It is utterly impossible that any man can keep run of the various alterations in his mind; it is also quite as impossible that he can keep all the notice bills, or if he did, that he could go through them to find the particular notice he requires, and I am quite sure all shipmasters will agree with me that at present lights are becoming so confusing that in hazy weather it is a very doubtful question when one sees a light what to make of it. I think a simple remedy might be found, and that is—

1st. No light be altered without at least twelve months notice expressed against the light in the published Admiralty list.

2nd. At least twelve months notice be given in the Admiralty list of all new lights, with all their characteristics, and likewise the absolute date of lighting.

The shipmaster and the shipowner would then only have to buy their Admiralty lists annually to be quite certain of their information upon these two important points, and I conceive it would be much better not to light for three months after a lighthouse is completed, than that a light should be mistaken for another in thick weather, and do that which it is expressly put there to prevent, viz., put a ship on shore.

I am, dear Sir, yours faithfully,

FRANK HARBORD,

Liverpool, 2nd October, 1878.

Master, s.s. *Thessaly*.

COLLISIONS AT SEA.

To the Editor of the "Nautical Magazine."

SIR,—I would humbly submit for your perusal (and if you thought it of any benefit, a place in your valuable publication), a few suggestions for the prevention of collisions at sea.

By Day.—I would suggest two colours—red for port, green for starboard ; the red, a square flag say 6ft. ; green, a pendant same length, fixed on a light staff about 10ft. long ; two sockets, one on starboard and the other on port side of the bridge, or look-out place where the officer in charge may be, for fixing them in.

Call two steamers meeting or crossing, A and B. A sees B about 2 or 3 points on her starboard bow, consequently A must give way. She decides to port and go under B's stern. Immediately on porting she hoists her red colour on *port side* and keeps it up all the time she is under the port helm. If she intends starboarding, she hoists (or holds it up) her green colour on *starboard side* and so on, making sure to hoist red on port and green on starboard side, to be more distinguishable ; if she intends keeping her course she hoists no colour.

By adopting this rule B would know what A intended or really was doing. B might easily answer by waving his corresponding colour (interpretative) I see you, and understand.

In every case where two ships are drawing near, and it is necessary to change their helms, their colours should be exhibited.

Should anyone through carelessness or indifference omit to hoist their colour, it would in no way whatever interfere with the present rules.

I have frequently had to pass (in a steamer) sailing ships in narrow waters, and have often been put to extreme difficulty in not being able to let them see on which side I intended passing, the sailing vessel hugging the shore under starboard helm, and where it has been necessary for each to give way to make room. Whereas with the colour signal, notice could be given in time for each to give all room possible.

By night.—I would suggest a screen so fixed to the side light, and under the management of the officer in charge of the deck, that the lights could be darkened in a moment ; so that when two steamers, A and B (A in all cases being the one to give way), are crossing, A intending porting for B on his starboard bow, simultaneously with porting his helm shuts off his starboard, or green light, and keeps it off until his port, or red light, is visible to B ; and if intending to break the rules of crossing he should

starboard for B on his port bow, shut off his port light, and so on ; so that whenever an officer wishes to show an opposite light, he immediately shuts off the visible light, and keeps it off until the opposite light is visible, or the helm steadied.

In the sad Thames disaster (which has cast such a gloom everywhere) had this rule been in force, the *Bywell Castle* intending to port for the *Princess Alice* would have shut off his green light, thereby leaving the *Princess Alice* no chance or excuse for starboarding ; it is simply B does not know what A is going to do until too late—that is the cause of many collisions.

A great deal has been suggested about blowing the steam-whistle in steamers, but on crowded rivers, or with more than two steamers close together, I don't think it practicable, as when you have to blow so often for so much "small fry" (and when the whistle gets full of water it requires a good blow to clear it), in case of more than two steamers it would be difficult to say which steamer blew.

A little difficulty may arise in the night signals by an object coming between A and B, so as to obscure the light, but which would only be for a few seconds ; but for the day signals, in my opinion, no obstacle could arise. The expense is so trifling, and arrangements so simple, that I think it worthy your consideration, and should be glad for your views on it. Apologising for this lengthened communication,

I am, Sir, your obedient servant,

A STEAMBOAT MASTER AND SUBSCRIBER.

Neyland, 10th October, 1878.

A PAPER on Port Sanitary Work will be read at the Society of Medical Officers of Health, 1, Adam Street, Adelphi, W.C., by Dr. Harry Leach, Medical Officer of Health for the Port of London, on the 15th inst. We are informed that all interested in nautical matters will be welcome, and will be invited to take part in the discussion, which should include many points interesting to owners and captains of ships, as well as to Government and other officials. The proceedings commence at 7.30 p.m.

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool.

ENGLISH (APPLICATIONS).

3698. John Boag, Liverpool, Master Mariner. "An improved method of ventilating ships and navigable vessels and apparatus therefor."

3699. Frederick Wm. Applegath, Dalston, London. "A life-buoy seat."

3704. Jas. Nelson, Gateshead, Engineer. "Improvements in steering apparatus for navigable vessels."

3710. A. H. Reichelt, Hamburg. "Improvements in the construction of screw propelling ships."

3714. Richard Rose, London. "Improvements in apparatus for saving life in the water and for extinguishing fire on board ship."

3725. Edmund Woodhead, Tottenham, London. "Improvements in life preservers for saving life from drowning."

3737. Hammond Kennard, Stoke Newington, Bombay Pilot Service. "Improvements in ships' and steamers' upper cabin decks for the saving of life at sea or on navigable rivers in cases of collision, foundering, &c., by means of an upper self-floating deck or decks."

3744. Edward Adrianus Caminada, Delft. "Rudder motion indicator and telegraphing on board ship by electricity."

3751. Edward Gardner Colton, of the office of W. P. Thompson & Co., British and International Patent Agents and Consulting Engineers, 6, Lord Street, Liverpool (a communication from abroad in trust for John A. Svedberg, Washington, U.S.) "Improvements in or appertaining to marine engine governors."

3765. John Jackson, West India Docks, London. "Improvements in the construction and arrangement of ship's berths."

3776. David Kennedy, Liverpool. "Improvements in and relating to steering apparatus worked by steam or other fluid, parts of which are applicable to other purposes where steam engines are used."

3777. Robert Bell, Egremont. "Improvements in steering or

manipulating steam ships and other vessels, and in apparatus therefor."

8792. Louis Autra, Soho, London. "Improvements in travelling bags, whereby they may be used for other purposes."

8821. Alfred Wm. Birt, 42, Dock Street, London. "Improvements in seats applicable for sustaining persons in the water."

8845. Benvenuto Benedetto d'Alessandro, Paris. "An improved life-preserving belt or buoy."

8855. Carl Christian Plath, Hamburg. "An improved self acting appliance for correcting and adjusting heeling errors in compasses."

8856. James Henry McLean, M.D., St. Louis. "Improvements in marine torpedoes."

8886. Robert Dougan, Ladbroke Grove Road, London. "Improvements in the construction of floating vessels."

8908. Rear-Admiral John Wallace Douglas McDonald, of Bembridge, I.W. "Improvements in horse flats or barges."

8950. Charles Ambrose McEvoy, London. "Improvements in torpedoes."

8979. William E. Flicker, London. "Improvements in marine engine regulators."

4014. David Hushton, Boston Mass, U.S.A. "Improvements in and relating to ships' sleeping births, which improvements are also applicable to other parts of ships and their furniture."

4078. Henry Park, Wandsworth. "Improvements in raising submerged ships or vessels."

ENGLISH (ABRIDGEMENTS).

553. Josiah Latimer Clark and John Stanfield, London. "Improvements in floating docks and pontoons." The sides of the dock are attached to the body by vertical grooves, so that these portions can be raised or lowered independently. The vessel is first raised by the dock in its normal or U shaped form as high as the power of the dock will admit. The sides are then allowed to descend the slides until they are nearly submerged, so that the end elevation of the dock resembles the letter H, and being keyed in their new position, and the water pumped out, their lifting power raises the vessel to its full height.

607. Charles Fielder, Plumstead. "Improvements in apparatus for cleaning the hulls of vessels and other submerged structures."

Two revolving brushes are carried in a frame and drawn along the bottom of the ship. A rope passes over two pulleys on the brushes to drive them, and also to move the frame, one end being attached to the hull, the other to a winch.

609. Matthew Hutton Atkinson, Newcastle-on-Tyne. "Improvements in circuit closers for torpedoes." A floating metal case is used; it carries a spindle having a disc on one end, and kept upright by a weight. It is so arranged that on a ship striking it the disc comes in contact with the case, completes circuit, and fires the fuse.

664. Wm. Henry Surtees, Sunderland, and Wm. Haden Richardson, Glasgow. "Improvements in and appertaining to lamps or lanterns applicable for use on ship board and in exposed situations generally." This consists in providing a piece or sheet of glass, outside the lens, so that the lens is not liable to be cracked by rain water or snow splashing on it when heated. A passage is left between the lens and sheet of glass, through which is current of air (separate and distinct from that which supplies the lamp) is caused to pass to cool the lens.

635. Edward Wellman Terrell, New York. "Improvements in armour, chiefly designed for ships of war." The armour is made cellular, and when the vessel is in action these cells are filled with water, thus lessening the weight of the armour and increasing the power of resistance.

671. Jacob Scott Matthews, Penarth. "Improvements in apparatus for manœuvring ships." To facilitate the turning or manœuvring of steamships, a transverse propeller is employed at the bow of the vessel, and can at pleasure be rotated in either direction by means of the main engines and without reversing. A spindle carrying a pulley from which the transverse propeller is driven by a strap carries a bevel wheel at its lower end, which can be thrown in or out of gear with one or other of the pinions on the main shaft of the engines.

673. Dr. Ernst Fleischer, Dessau, Germany. "An Apparatus called 'hydromotor,' for propelling and steering vessels and other floating objects by means of hydraulic re-action produced through direct action of steam with optional expansion or condensation upon water." A closed chamber communicates at top with a

steam supply, and at bottom with the water, in which the water floats, firstly, through a large opening provided with a stop-valve through which the water can enter it; secondly, through a pipe leading to the stern, and also, if required, to the stem of the vessel, through which the water is forced by the steam, so as, by the re-action of the jet thus produced, to effect the propulsion of the vessel; thirdly, when required to effect also the steering of the vessel, the chamber has also two lateral branch pipes at the bottom, passing out through the sides of the vessel. When the chamber is full of water steam is admitted at the top, and forces out, so as to propel the vessel. The steam in the chamber is then condensed, thereby causing water to be forced in through the inlet pipe, and thus fill the chamber again.

747. John Louis Lay, Paris. "Improvements in and relating to torpedo boats, and apparatus for guiding, controlling, and firing the same." This boat consists of a cylindrical hull with conical ends of sheet iron or steel of any convenient length or diameter. It is provided with a double screw, or two screws revolving in opposite directions for its propulsion; the shaft of one of these propellers is hollow, and the shaft of the other passes through the same; they are actuated by an engine operated by the expansive force of carbonic acid gas or ammoniacal gas. The boat is provided with a double set of side wings or horizontal rudders, one forward and one aft, for the purpose of causing the required submergence of the boat; they are adjusted by means of a screw and arms and levers inside the boat operated from outside of same. Two guide rods, one aft and one forward, project up from the boat to enable the operator to determine its position at any part of its journey; at night these are provided with lights. The medium of communication between the torpedo boat and the station occupied by the operator, and whereby the boat is stopped, steered, fired, &c., is an electric cable carried in the boat on a coil or reel and paid out as the boat progresses. One end of this cable is connected to a keyboard at the station from which the torpedo boats are controlled. This keyboard is provided with a suitable voltaic battery for generating the electric current.

AMERICAN.

207445. Elisha Robbins, Cotuit, Massachusetts. "Improve-

ment in anchor support and tripper." This tripper is composed of a head, and a dovetail extension or tenon projecting from such head. It is to extend into a vertical recess or notch in the upper part of the bulwarks or its rail, the tripper being held thereto by cap-plates let into the rail flush with its surface. One of such plates answers as a shoulder to support the anchor-fluke when it is in the head or upper part of the curved inclined chamber or channel of the tripper.

208061. John Bliss and Geo. H. Bliss, Brooklyn, New York. "Improvement in rotators for ships' logs." This rotator is constructed so as to form no salient angles or projections whereon seaweed can accumulate while it is being used. The body of the rotator is tubular, the hole being entirely through the same. The front end is tapering and the spiral wings or blades continue as a gradual taper to the place of greatest diameter, so as not to present any angle for the lodgement of seaweed. The line is of braided strands, and is passed through the tubular body folded back upon itself and served around with cord, and a pin or screw is passed transversely through the body and through the loop thus formed, so as to secure the line in the most reliable manner.

208211. Samuel T. Swasey, New York. "Improvement in screw propellers." This consists in constructing upon the force side of each blade, a series of circular grooves which are equidistant, and extend out to the extreme end of the blade. Upon the extreme rear edges of the blades are formed flanges. The water is thus forced inward towards the hub of the wheel and is prevented slipping off too readily, thereby obtaining a greater propelling force from the same amount of steam.

BELGIUM.

45769. F. Ewers. "Improvements in hyperbolic paddle brackets."

45815. R. Hitchcock. "Improvements in ships' lights, and other similar lamps."

46180. D. G. Haskins. "Improvements in lifeboats."

FRANCE.

122151. Mèhu, St. Malo. "A jib ring and stay sail for vessels."

122202. Fosberry. "Protecting gun boats, torpedo boats, and other similar vessels from shot and other projectiles."

122213. Massiot. "A floating life stick."
 122222. Celler. "Using substances for polishing the surface of hydraulic screws and propellers, and also of the hulls and rudders of vessels."
 122249. Hewett. "Improvements in armour plates."
 12250. Caillard Bros. "Improvements in marine and other boilers."
 122305. Motte. "An apparatus for imparting high speed to steamboats."
 122847. Bellay. "An insubmersive boat."
 122903. Fleischer. "A so-called hydromotor for propelling and steering ships and other floating bodies."

GERMANY.

2569. E. E. Thode and Knoop. "Manufacturing armour-plates."
 2488. Dr. E. Fleischer, Dessau. "An apparatus for propelling and steering vessels or other floating objects by hydraulic reaction produced by direct action of steam on water."
 2531. H. C. Carstens, Hamburg. "An apparatus for raising sunken vessels."
 2596. L. Von Bremen & Co., Kiel. "An appliance in diving bells and diving lanterns for discharging the products of combustion."
 2619. W. Rowlinson, Windermere, England. "Obtaining armour-plates by casting molten metal between slabs joined together by cylindrical stay bolts of wrought iron."
 2640. H. Haedicke, Berlin. "A steam-boiler for steam by boats with a steam-chamber below."
 2966. D. M. I. Campbell, Loch Gair House, Argyll, Scotland. "A coating of india-rubber or gutta-percha inflated with air for nullifying the action of torpedoes upon the bottoms of war vessels."

AUSTRIA.

- W. Koderle, Prague. "A ship propeller and motor."
 J. L. Lay, Paris. "Improvements in electric apparatus for steering, controlling, and firing torpedo boats."

VICTORIA.

2543. George Washington Robbins, Sandrige, Melbourne. "An improved contrivance for loading and unloading ballast, &c., from ships."

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
274	ENGLAND—East Coast—Yarmouth District	Alteration of buoyage, &c.
275	" " Lynn Deep	New light-vessel and fog-signal.
276	" West Coast—Milford Haven	Alteration of lights at Pembroke Dockyard.
277	FRANCE—North Coast—Dunkerque	Alteration of light, and new tide signals.
278	NORTH SEA—Hook of Holland Canal	Alteration of lights postponed.
279	BALTIC ENTRANCE—Sound—Kronberg	Amended notice of light.
280	BALTIC—Sweden—Sodra Udde	Alteration of light.
281	" " Kalmar Sund—Grims-kar	Alteration of light.
282	NORWAY—Farsund Channel—South Kat-land Islet	New light.
283	" Christiansand Fiord—Outer	New light.
284	" " Gronningen Islet	Alteration of light.
285	" " Odderö Islet	Proposed light.
286	" Stordoen Island—Leervig	Period of exhibition of light.
287	" Ingo Island—Fruholm	Shoal ground.
288	MEDITERRANEAN—Spain—Columbretes Islets	Change in colour of lighthouse.
289	" " Llobregat River	Non-existence of Stamford rock.
290	" Bonifacio Strait—Barrettini Pass	Discovery of sunken dangers.
291	" " Cape Testa	New sunken dangers.
292	" " Spargi Island	Alteration of lights.
293	ADRIATIC—Spalato Channel—Port Spalato	New lights.
294	" Cattaro Gulf—Catene	Additional particulars.
295	PERSIAN GULF—Orbise Shoal	New lights on harbour works, and particulars of anchorage.
296	INDIA—Bay of Bengal—Madras	New light.
297	JAPAN—Nipon Island—Inland Sea—Osaka	New leading light.
298	" " —Kishu Gawa	Information respecting stations.
299	" " Gulf of Yedo—Kanon Saki	New screw-pile lighthouse.
300	AUSTRALIA—Queensland—Torres Strait	New automatic signal-buoy.
	UNITED STATES—Virginia—Nansmond River	
	" New Jersey—Brigantine Shoal	

NAUTICAL NOTICES.

274.—ENGLAND.—*East Coast—Alteration of Buoyage in the Yarmouth District, &c.*—In consequence of the shifting of the sands in the Yarmouth district, it has been found necessary to

make the following alterations in the positions of the under-mentioned buoys, and of the St. Nicholas Light-vessel; also in the character of some of the buoys:—

(1.) The *South West Barnard Buoy* has been moved N.E. by N. $\frac{1}{2}$ cable, and now lies in 16 feet at low water spring tides, with the following marks and compass bearings, viz.:—Covehithe Church, its length Southwards of the Coast Guard House on Covehitheness, W. by N. N^y.; Southwold Church Tower just Westward of the Easternmost House on Eastonness, S.W. $\frac{1}{2}$ W.; Inner Barnard buoy, S. by W. W^y. (Distant $\frac{1}{10}$ ths of a mile); Covehithe buoy, N.E. by N. (Distant $6\frac{1}{2}$ -tenths of a mile).

(2.) The *Inner Shoal Buoy* has been moved W. $1\frac{1}{2}$ cables, and now lies in 18 feet low water spring tides, with the following marks and compass bearings, viz.:—Corton Hall, midway between Lowestoft Low Light Cottages and the Black Telegraph House, N. $\frac{1}{4}$ E.; The Cupola at the Old Fish Wharf, midway between the Two Lookouts on the North side of Lowestoft harbour, W. $\frac{1}{2}$ N.; North Newcome buoy, S.W. $\frac{1}{2}$ S. (Distant $\frac{1}{10}$ ths of a mile); North Newcome Spit buoy, E. by N. $\frac{1}{4}$ N. (Distant $\frac{7}{10}$ ths of a mile); Lowestoft Low Lighthouse, N. $\frac{3}{4}$ E. (Distant $\frac{1}{10}$ ths of a mile).

(3.) The *South Holm Buoy* has been moved S.W. 1 cable, and now lies in $6\frac{1}{2}$ fathoms at low water spring tides, with the following marks and compass bearings, viz.:—Corton Hall in line with the East End of the Jetty on Lowestoftness, N. E^y.; a Tall Chimney, its length Northward of the Buildings next Northward of Kirkley Church, N.W. $\frac{1}{4}$ N.; East Barnard buoy, S.W. by S. (Distant $2\frac{7}{10}$ ths miles); S.E. Newcome buoy, S.W. by S. W^y. (Distant $1\frac{5}{10}$ ths mile); East Newcome buoy, S.W. $\frac{1}{4}$ S. (Distant $\frac{7}{10}$ ths of a mile); S.W. Holm buoy, N.N.W. N^y. (Distant $2\frac{1}{2}$ -tenths of a mile); Middle Holm buoy, N.E. N^y. (Distant $1\frac{8}{10}$ ths mile).

(4.) The *South West Holm Buoy* has been moved S.W. by S. 1 cable, and now lies in $4\frac{1}{2}$ fathoms at low water spring tides, with the following marks and compass bearings, viz.:—Corton Hall, just open Eastward of Lowestoft Low Lighthouse, N. $\frac{1}{4}$ E.; a Tall Chimney, its full length Southward of a Red Tiled Barn, Northward of Kirkley Church, N.W.; South Holm buoy, S.S.E. Sly. (Distant $2\frac{1}{2}$ -tenths of a mile); East Newcome buoy, S. $\frac{1}{4}$ W.

(Distant $\frac{1}{10}$ ths of a mile); East Middle Newcome buoy, N. by W. (Distant $\frac{1}{10}$ ths of a mile); N.E. Newcombe buoy, N.N.E. $E^{\frac{1}{2}}$ (Distant $\frac{1}{10}$ ths of a mile); West Holm buoy, N.E. by N. $N^{\frac{1}{2}}$ (Distant $\frac{1}{10}$ ths mile).

(5.) The *East Holm Buoy* has been moved E. 1 cable, and now lies in 12 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—Corton Church Tower, just open Northward of the Highest House in Corton Village, N.W. $\frac{1}{2}$ W.; Kirkley Church Tower, its length Southward of the South Pier Lighthouse at Lowestoft, W. by S. $\frac{1}{2}$ S. $S^{\frac{1}{2}}$; South Corton buoy, N. $\frac{1}{2}$ W. (Distance $\frac{1}{10}$ ths mile); South Scroby buoy, N. by E. $\frac{1}{2}$ E. (Distant $\frac{2}{10}$ ths miles); Corton Light-vessel, N.N.E. $\frac{3}{4}$ E. (Distant $\frac{1}{10}$ ths mile); Middle Holm buoy, S.W. $\frac{1}{2}$ S. (Distant $\frac{1}{10}$ ths mile); East Barnard buoy, S.W. $\frac{1}{2}$ S. (Distant $\frac{6}{10}$ ths miles).

(6.) The *South East Corton Buoy* has been altered from a can buoy to an 8 feet conical buoy.

(7.) The *North West Corton Buoy* has been altered from a can buoy to an 8 feet conical buoy, and has been moved E. by N. 2 cables, and now lies in $6\frac{1}{2}$ fathoms at low water spring tides, with the following marks and compass bearings, viz.:—Gorleston Church Tower, its length Westward of the Lighthouse on Gorleston South Pier Head, N.W. by N. $N^{\frac{1}{2}}$; Corton Mill, just open Westward of a Wood, S.W. $\frac{1}{2}$ W. $W^{\frac{1}{2}}$; St. Nicholas Light-vessel, N. $\frac{3}{4}$ E. (Distant $\frac{1}{10}$ ths mile); North Corton buoy, N.N.E. $N^{\frac{1}{2}}$ (Distant $\frac{1}{10}$ ths mile); S.E. Corton buoy, S.E. by S. (Distant $\frac{1}{10}$ ths of a mile); S.W. Corton buoy, S.S.W. $W^{\frac{1}{2}}$ (Distant $\frac{1}{10}$ th mile).

(8.) Through *Corton Sand*, in a line from the *S.E. Corton* to the *N.W. Corton Buoys*, there is a Swatchway of about 2 cables in width, and 21 feet at low water spring tides.

(9.) The *North Corton Buoy* has been moved N. $2\frac{1}{2}$ cables, and now lies in 19 feet at low water spring tides, with the following marks and compass bearings, viz.:—St. Nicholas Church Tower, its breadth Eastward of the Yarmouth Grammar School, bearing N. by W. $\frac{3}{4}$ W.; the Southernmost of three remarkable trees open Northward of the North Pier Head, at Yarmouth Haven, W.N.W.

W^{by}; St. Nicholas Light-vessel, N. by W. (Distant $\frac{1}{10}$ ths of a mile); Scroby South Elbow buoy, N. $\frac{1}{4}$ E. (Distant $\frac{1}{10}$ ths of a mile); South Scroby Spit buoy, N.E. $\frac{1}{4}$ N. (Distant $2\frac{1}{2}$ -tenths of a mile); Scroby Hook buoy, S.E. $\frac{3}{4}$ S. (Distant $\frac{1}{10}$ ths of a mile); South Scroby buoy, S. by E. $\frac{1}{4}$ E. (Distant $2\frac{1}{10}$ ths miles); Corton Light-vessel, S. by E. $\frac{1}{4}$ E. E^{by} (Distant $3\frac{1}{10}$ ths miles); N.E. Corton buoy, S. $\frac{1}{4}$ E. S^{by} (Distant $1\frac{1}{10}$ th mile); N.W. Corton buoy, S.S.W. S^{by} (Distant $1\frac{2}{10}$ ths mile).

(10.) The *Scroby South Hook Buoy* has been moved E. $\frac{3}{4}$ of a cable, and now lies in 5 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—St. James's Church, Yarmouth, its length Westward of South Town West Mill, bearing N.N.W. $\frac{1}{2}$ W.; the Pilot House on Gorleston South Pier, in line with the North bluff end of a wood, N.W. $\frac{1}{4}$ W.; Covehithe Church, in line with the West end of the Jetty at Lowestoftness, S.W. $\frac{1}{4}$ S. S^{by}; South Scroby buoy, S. $\frac{1}{2}$ E. (Distant $\frac{1}{10}$ ths of a mile); S.E. Corton buoy, S.W. W^{by} (Distant $8\frac{1}{2}$ -tenths of a mile); N.E. Corton buoy, N.W. by W. $\frac{1}{4}$ W. (Distant $\frac{1}{10}$ ths of a mile); Scroby Hook buoy, N. by W. (Distant $\frac{1}{10}$ ths of a mile).

(11.) The *Scroby Hook Buoy* has been moved N. by E. $\frac{3}{4}$ of a cable, and now lies in $4\frac{1}{2}$ fathoms at low water spring tides, with the following marks and compass bearings, viz.:—The Cupola of St. George's Chapel open Eastward of the Wellington Pier, N.N.W. $\frac{1}{4}$ W.; Hopton New Church open Southward of some Cottage Chimneys, and open of the North end of Herring Fleet Wood, W. by S.; Scroby South Hook buoy, S. by E. (Distant $\frac{1}{10}$ ths of a mile); North East Corton buoy, S.W. by S. (Distant $\frac{1}{10}$ ths of a mile); North Corton buoy, N.W. $\frac{3}{4}$ N. (Distant $\frac{1}{10}$ ths of a mile); St. Nicholas light-vessel, N.N.W. (Distant $1\frac{1}{10}$ ths mile); South Scroby Spit buoy, N. by W. $\frac{1}{4}$ W. (Distant $\frac{1}{10}$ ths of a mile).

(12.) The *South Scroby Spit Buoy* has been altered from a conical buoy to a can buoy, and has been moved S.E. by E. $\frac{1}{2}$ E. 2 cables, and now lies in 25 feet at low water spring tides, with the following marks and compass bearings, viz.:—St. Nicholas Church Tower half on the West side of the Roman Catholic Church Tower at Yarmouth, N.N.W. $\frac{1}{4}$ W.; the Pilots' Lookout on Gorleston South Pier in the opening between the high Houses on

the Cliff, W. by N. $W^{\frac{1}{2}}$; Scroby South Elbow buoy, N. by W. $\frac{1}{2}$ W. (Distant $\frac{1}{10}$ ths of a mile); St. Nicholas light-vessel, N.N.W. $\frac{1}{2}$ W. (Distant $\frac{1}{10}$ ths of a mile); North Corton buoy, S.W. $\frac{1}{2}$ S. (Distant $2\frac{1}{2}$ tenths of a mile); Scroby Hook buoy, S. by E. $\frac{1}{2}$ E. (Distant $\frac{1}{10}$ ths of a mile).

(13.) The *Scroby South Elbow Buoy* has been altered from a can to an 8 foot conical buoy, and has been moved S.W. by S. $2\frac{1}{2}$ cables, and now lies in 11 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—St. Peter's Church, touching the East end of the Wellington Pier Head, N.W. $\frac{3}{4}$ N.; Gorleston Church, just open Southward of the Petroleum Store on Yarmouth South Denes, W. $\frac{3}{4}$ N.; Scroby Elbow (Bell) buoy, N. by E. $\frac{1}{2}$ E. (Distant $2\frac{1}{10}$ ths miles); South West Scroby buoy, N. by E. $\frac{3}{4}$ E. (Distant 1 mile); South Scroby Spit buoy, S. by E. $\frac{1}{2}$ E. (Distant $\frac{1}{10}$ ths of a mile); North Corton buoy, S. $\frac{1}{2}$ W. (Distant $\frac{1}{10}$ ths of a mile); St. Nicholas Light-vessel, W. by N. (Distant $1\frac{1}{2}$ cables).

(14.) The *St. Nicholas Light-Vessel* has been moved N. $\frac{1}{2}$ W. 4 cables, and now lies in 10 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—St. Nicholas Church Tower, its breadth Westward of the Roman Catholic Church at Yarmouth, N.N.W. $\frac{1}{2}$ W.; Gorleston Church Tower in line with the South end of the Petroleum Store on Yarmouth South Denes, W. $\frac{3}{4}$ N.; Scroby Elbow (bell) buoy, N. by E. $\frac{1}{2}$ E. (Distant $2\frac{1}{10}$ ths miles); Scroby South Elbow buoy, E. by S. (Distant $1\frac{1}{2}$ cables); South Scroby Spit buoy, S.S.E. $\frac{1}{2}$ E. (Distant $\frac{1}{10}$ ths of a mile); South Scroby buoy, S. by E. $\frac{1}{2}$ E. Ely. (Distant 3 miles); Corton Light-vessel, S. by E. $\frac{1}{2}$ E. (Distant $4\frac{1}{10}$ th miles); North Corton buoy, S. by E. (Distant $\frac{1}{10}$ ths of a mile); North West Corton buoy, S. $\frac{3}{4}$ W. (Distant $1\frac{1}{10}$ ths mile); North Holm buoy, S. by W. $\frac{3}{4}$ W. (Distant $4\frac{1}{10}$ ths miles); North Bank buoy, W. $\frac{1}{2}$ S. (Distant $\frac{1}{10}$ ths of a mile); Cockle Light-vessel, N. by E. $\frac{3}{4}$ E. (Distant $6\frac{1}{10}$ ths miles).

(15.) The *Scroby Elbow Buoy* has been moved N. by E. 2 cables, and now lies in 7 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—East Caistor Church, its length Westward of the Water Works Column, N.N.W.

$\frac{3}{4}$ W.; Nelson's Monument, its length Eastward of Gorleston Church, S.W. $\frac{1}{4}$ W.; S.W. Scroby buoy, S. $\frac{3}{4}$ W. (Distant $1\frac{1}{10}$ ths mile); Scroby South Elbow buoy, S. by W. $\frac{1}{4}$ W. (Distant $2\frac{1}{10}$ ths miles); St. Nicholas Light-vessel, S. by W. $\frac{1}{2}$ W. (Distant $2\frac{1}{10}$ ths miles); South Caistor buoy, N.W. $\frac{1}{4}$ N. (Distant $\frac{1}{10}$ ths of a mile); Caistor Elbow buoy, N. $\frac{1}{4}$ E. (Distant $1\frac{1}{10}$ ths mile); Cockle light-vessel, N. by E. $\frac{3}{4}$ E. (Distant $3\frac{1}{10}$ ths miles); N.W. Scroby buoy, N.N.E. N^{by}. (Distant $2\frac{1}{10}$ ths miles); West Scroby buoy, N.E. $\frac{1}{4}$ E. E^{by}. (Distant $\frac{1}{10}$ ths of a mile.)

(16.) The *N.W. Scroby Buoy* has been moved N.N.W. 1 cable, and now lies in 5 fathoms at low water spring tides, with the following marks and compass bearings, viz.:—Ormsby Church (St. Margaret's), just open Northward of the California Lookout, W. by N. $\frac{1}{2}$ N.; Caistor Mill and Lookout in line, S.W. by W. $\frac{1}{4}$ W.; North Scroby buoy, N.N.E. $\frac{1}{4}$ E. (Distant $1\frac{1}{10}$ th mile); Cockle Light-vessel, N. by E. $\frac{1}{4}$ E. (Distant $1\frac{1}{10}$ th mile); S.E. Cockle buoy, N. by W. $\frac{3}{4}$ W. (Distant $\frac{1}{10}$ ths of a mile); North Caistor buoy, W. by N. $\frac{1}{4}$ N. (Distant $\frac{1}{10}$ ths of a mile); Scroby Elbow buoy, S.S.W. (Distant $2\frac{1}{10}$ ths miles); Middle Scroby buoy, S. $\frac{1}{4}$ W. (Distant $1\frac{1}{10}$ th mile).

275.—ENGLAND.—*East Coast.—The Wash.—Lynn Deep.*—*Light-Vessel and Fog-Signal, Lynn Channel Entrance.*—A light is now exhibited from a light-vessel placed at the north-east end of Wisbeach bar flat, west side of Lynn channel entrance, Lynn deeps. It is a *fixed white* light, elevated 38 feet above the sea. The light-vessel, with the words *Bar Flat* on her sides, and globe at masthead, is moored in $3\frac{1}{2}$ fathoms at low water spring tides, with the following bearings and distances, viz.:—Roaring Middle buoy, E.N.E. $2\frac{1}{10}$ ths miles; buoy No. 1, E. $\frac{1}{4}$ S. $1\frac{1}{10}$ th mile; buoy No. 2, S.E. by S. $\frac{1}{10}$ ths of a mile; Outer Gat buoy, N.W. $\frac{1}{2}$ N. $1\frac{1}{10}$ ths mile.

Note.—Entering Lynn deeps and having passed Well light-vessel, a W.S.W. course should be steered for about six miles, or until Hunstanton point light (red sector) bears S.E. by E. $\frac{3}{4}$ E.; thence the course to Lynn channel light-vessel is S.W. for about $2\frac{1}{2}$ miles. *Variation*, 19° W. During thick and foggy weather, a *warning gun* will be fired, and a gong sounded.

276.—ENGLAND.—*West Coast.*—*Milford Haven.*—*Lights at Pembroke Dockyard.*—The following alterations have been made in the lights exhibited at H.M. Dockyard, for facilitating the navigation of the eastern part of Milford Haven :—The high light, *fixed red*, is now elevated 48 feet above the sea, and is visible between the bearings E. by S. $\frac{1}{4}$ S. and S.E. $\frac{1}{4}$ S. The low light, *fixed red*, is visible between the bearings E. by S. $\frac{1}{4}$ S. and S.S.W.; a *green* sector marks the direction of Carr spit, from S. $\frac{1}{4}$ E. to S. by E. $\frac{1}{4}$ E. Variation, $21\frac{1}{4}^{\circ}$ W.

277.—FRANCE.—*North Coast.*—*Dunkerque Harbour.*—*Alteration in West Mole Light, and Establishment of Tidal Signals.*—On 1st November, 1878, the following alterations will be made in the light exhibited on the west mole head, Dunkerque harbour :—It will be a *coloured* light, varying in colour; and will also show flashes to indicate the state of the tide; it will be elevated 33 feet above high water, and be visible from a distance of 9 miles. This light will indicate the height of the tide above low water ordinary springs, and will denote every 10 inches of rise, when such height is $6\frac{1}{2}$ feet and upwards. When the tide is less than $6\frac{1}{2}$ feet above low water and *rising*, the light will show *red*; when less than $6\frac{1}{2}$ feet and *falling*, the light will show *green*. With the height of the tide $6\frac{1}{2}$ feet and upwards, the light will show *white*, and be varied by a group of *coloured flashes* at intervals of *eighty seconds*, commencing when the rise is 7 feet 4 inches. The flashes in each of these groups will be shown at intervals of *five seconds*; each *red* flash adding 3 feet 4 inches to the initial height of $6\frac{1}{2}$ feet; and each *green* flash 10 inches. While the water is *rising*, the light (whatever colour may be shown) will be eclipsed for a short period every *eighty seconds*; while the water is *falling*, it will be eclipsed *twice* in quick succession every *eighty seconds*; but when the water is at a stand still, the light will not be eclipsed. When the light shows *fixed white* varied by groups of *coloured flashes*, the eclipses will take place about the middle of the interval separating the groups. The light tower, 27 feet high and situated 49 feet within the extremity of the mole, is built of iron and painted white. Position as given, lat. $51^{\circ} 8' 25''$ N., long. $2^{\circ} 21' 25''$ E.

278.—NORTH SEA.—*Maas River Entrance.*—*Hook of Holland*

Canal.—Position of Leading Lights.—With reference to Notice 218, p. 852, the intended changes not having as yet been carried into effect, the leading lights on the south shore of the canal entrance remain unaltered in position.

279.—BALTIC ENTRANCE.—*Sound.—Elsinore (Helsingör).*—*Amended Notice Respecting Alteration in Kronborg Light.*—In reference to Notice 247, p. 947, the light is now *fixed white*, varied by a *red flash* of five seconds' duration every half minute, visible 15 miles.

280.—BALTIC.—*Sweden.—Öland Island.*—*Alteration in Södra Udde Light.*—In October, 1878, the following alteration would be made in the character of Södra Udde light, Öland point, south extreme of Öland island. It will be a *fixed* and *flashing* light, showing *two flashes* in succession between the bearings S. 14° E. and S. 6° E. (this sector will show over the position of Ut Grund shoal); *fixed* between S. 6° E. and S. 6° W.; and a *single flash* between S. 6° W. and S. 14° W. On all other bearings the fixed light will be visible. *Variation*, 9¼° W.

281.—BALTIC.—*Sweden.—Kalmar Sund.*—*Alteration in Grimskär Light.*—In October, 1878, the following alteration would be made in the character of the light exhibited on Grimskär, Kalmar sund:—It will be a *fixed* and *flashing* light, showing *two flashes* in succession followed by an eclipse of *four seconds'* duration between the bearings N. 1° E. and N. 17° E.; *fixed* between N. 17° E. and N. 33° E.; and a *single flash* of one second duration followed by an eclipse of *four seconds* between N. 33° E. and N. 49° E. In the approach to Kalmar harbour, there will also be shown *two flashes* in succession between the bearings S. 31° W. and S. 35¼° W.; a *fixed* light between S. 35¼° W. and S. 36¼° W.; and a *single flash* between S. 36¾° W. and S. 41° W. On all other bearings the *fixed* light will be visible. Further notice will be given when the alterations have been completed. *Variation*, 9¼° W.

282.—NORWAY.—*South Coast.—Farsund Channel.*—*Light on South Katland Islet.*—A light is now exhibited from the low tower of a large white building at the south-west point of South Katland islet, east side of channel to Farsund. It is a *fixed* light, elevated 51 feet above the sea, and visible 10 miles. From sea-

ward the light shows *white* between the bearings N.E. (on this bearing it leads eastward of Færöfuen and Færökälven shoals) and North; *red* between North and N.N.W. $\frac{1}{4}$ W. (over the positions of Roholmfu and Braadsteen shoals); and *white* from N.N.W. $\frac{1}{4}$ W. to West. Towards and northwards of Præstö sound, the light shows *white* between the bearings S.E. by E. $\frac{1}{4}$ E. and S. $\frac{1}{4}$ W. In the direction of Færökälven, a sector of *white* light is shown through an arc of 5° , between the bearings East and E. $\frac{1}{4}$ N.; the northern limit of this sector leads seaward of Sranefuen and Skvætskjaerstenen shoals; the southern limit northward of Rævöflu and Rævosk shoals. Rævökraggen (which is clear of danger on the south-west side) is nearly in the centre of this sector, which also shows over the south end of Rævö islet. Position, lat. $58^{\circ} 3' 30''$ N., long. $6^{\circ} 50' 35''$ E. Variation, $16\frac{1}{4}^{\circ}$ W.

Note.—After rounding the south-west side of South Katland islet at the distance of a cable, steer N.W., and having passed through that portion of arc in which the light is obscured, anchor in Færö road when the light is again visible, or proceed through the northern channels. At the north extreme of Færökälven a reflector shows a sector of light on a W.N.W. bearing, through an arc of about 12° .

283.—NORWAY.—*South Coast.—Christiansand Fiord.—Light at Outer Grønningen Islet.*—A light is now exhibited from the west gable of a large white building on the summit of Outer Grønningen islet, east side of entrance to Christiansand fiord. It is a *fixed red* light, elevated 50 feet above the sea, and visible between the bearings N.W. (through east) and S.S.E., from a distance of 9 miles. The light kept on a N.W. bearing leads seaward of Svaetingboen shoal; on a S.S.E. bearing it leads westward of Outer Kirkebø and Dversøboen patches. Position, lat. $58^{\circ} 5' 5''$ N., long. $8^{\circ} 5' 50''$ E. Variation, 16° W.

Note.—To pass westward of Grønningboen, Outer Grønningen islet should not be approached nearer than half a cable.

284.—NORWAY.—*South Coast—Christiansand Fiord—Alteration in Odderø Island Light.*—On the exhibition of the light at Outer Grønningen islet the following alteration would be made in the light exhibited at Odderø island:—The red light previously shown east-

ward of the channel fairway between Oxö and Grönningen islets is discontinued, and a *fixed white* light is now shown eastward of the fairway till obscured by the southern part of Odderö island.

285.—NORWAY.—*West Coast—Stordöen Island.—Intended Light at Leervig.*—It is intended, probably in the autumn of 1878, to exhibit a *fixed white* light at Leervig, south-east coast of Stordöen island. Position, lat. $59^{\circ} 46' 50''$ N., long. $5^{\circ} 32' 55''$ E.

286.—NORWAY.—*North Coast.—Inyo Island.—Fruholm Light.*—This light will be exhibited from 25th August to 31st March, instead of to 31st December, as formerly.

287.—MEDITERRANEAN.—*Spain.—East Coast.—Shoal Westward of Columbrete Islets.*—The position of the shoal ground westward of Columbrete islets has been determined by the Spanish surveying-vessel *Peles*. This shoal (*Barra Alta*) consists of a rocky patch, about 4 cables in length, east and west, and $1\frac{1}{2}$ cables broad, with a general depth of less than 16 fathoms; but there are two small rocky heads, close together, with 6 and $7\frac{3}{4}$ fathoms water over them respectively, lying S. 76° W., distant 8.1 miles from Colibre islet lighthouse; the depths around the shoal increase rapidly to 50 fathoms, sandy bottom, at the distance of 3 to 4 cables. Approximate position of shoalest spot, lat. $39^{\circ} 50' 30''$ N., long. $0^{\circ} 35'$ E. Variation, $16\frac{1}{4}^{\circ}$ W.

288.—MEDITERRANEAN.—*Spain.—East Coast.—Llobregat River Lighthouse.*—The lighthouse on the north side of Llobregat river entrance will be painted yellow with white bands.

289.—MEDITERRANEAN.—*Bonifacio Strait.—Non-existence of Stamford Rock, Barrettini Pass.*—With reference to Notice 226, p. 856, on the reported existence of a sunken danger (Stamford rock), in Barrettini pass, and on which the British steam-vessel *Stamford* was stated to have struck, an examination of this locality has been made by the surveying-vessel *Washington*, with the following results. No indication of shoal ground was found in the fairway of Barrettini pass, but the sunken rocky ledge off Marginetto point (the north extreme of Maddalena island), was ascertained to extend further northward than shown, and a pinnacle rock having 13 feet water was found in that direction at the distance of $1\frac{1}{4}$ cables from Marginetto point, the ledge trending thence

to the south-east and joining the coast of Maddalena island. Other shoals exist in the neighbourhood of Maddalena island; an examination is in progress by the surveying-vessel *Washington*, further notice as to the result of which will be published.

290.—MEDITERRANEAN.—*Bonifacio Strait*.—*Sunken Dangers near Cape Testa*.—The following information relates to two sunken dangers lying westward of Cape Testa, north coast of Sardinia, the positions of which have been determined by the surveying-vessel *Washington*:—(1.) A sunken danger (*North Testa rock*) of small extent, on which the sea breaks in heavy weather, consists of two pinnacles, having a depth of 18 feet, with from 16 to 22 fathoms close around; it lies with the north extremes of Budello island and Cape Testa in line, distant from Cape Testa about $1\frac{1}{2}$ miles. Position approximate, lat. $41^{\circ} 14' 25''$ N., long. $9^{\circ} 6' 50''$ E. (2.) A sunken danger (*South Testa rock*), lying about one mile S.W. of North Testa rock, consists of two pinnacles of small extent, 40 yards apart, with a least depth of $4\frac{1}{2}$ fathoms, and 11 to 22 fathoms, rocky bottom, close around. From this position, Cape Testa bears N.E. by E. $\frac{1}{2}$ E., distant nearly $2\frac{1}{2}$ miles. Variation, $13\frac{1}{2}^{\circ}$ W.

291.—MEDITERRANEAN.—*Bonifacio Strait*.—*Sunken Danger Northward of Spargi Island*.—A sunken danger (*Washington rock*), lies nearly midway between Spargi and Budello islands, Bonifacio strait. The position has been determined by the surveying-vessel *Washington*; it is almost circular in shape, half a cable in diameter; the least water found was 28 feet; it lies with the following bearings, viz.:—West extreme of Budello island, N. by E.; N.E. point of Spargi island in line with Guadia Vecchia fort (Maddalena island) S.E. $\frac{1}{4}$ S.; rocks westward of Spargi island in line with Cavalli islet (Sardinia), S.S.W. $\frac{1}{4}$ W.; centre of Sparagiotelli rocks, S.W. by W. $\frac{1}{4}$ W. Variation, $13\frac{1}{2}^{\circ}$ W.

292.—ADRIATIC.—*Spalato Channel*.—*Alterations in Lights at Port Spalato (Spalatro)*.—(1.) The fixed green light previously shown from the extremity of the jetty at St. Stephano point, western side of entrance to port Spalato, is discontinued. (2.) A light is now exhibited from the outer extremity of the new mole, which extends on the east side of the entrance in a W. by N. direction from

Boticella point about 500 yards ; it is a *fixed green* light, elevated 24 feet above the sea, and visible 5 miles. *Variation*, $10\frac{1}{4}^{\circ}$ W.

(3.) The fixed green light previously shown from the eastern part of the town is discontinued. (4.) A light is now exhibited from the eastern shore of the port, at the new bridge near the railway station ; it is a *fixed white* light with *red* sector, visible 2 miles.

293.—ADRIATIC.—*Gulf of Cattaro*.—*Lights in Catene Strait*.—

(1.) A *fixed red* light is now exhibited at St. Domenica point, western side of Catene strait, approach to gulf of Cattaro.

(2.) A *fixed green* light is also exhibited at the north-west point of entrance of Catene strait. These lights are shown from wooden supports.

294.—PERSIAN GULF.—*Additional Information Concerning Oribe Shoal*.—With reference to Notice 253, p. 948, on the existence of a sunken danger (Oribe shoal), reported as situated in the fairway of the Persian Gulf, about midway between Ras-al-Mutaf and Rennie shoal, the master of the *Oribe* reports that Oribe shoal extends about a quarter of a mile north and south, the southern and shoalest part appeared to be nearly awash, and about 30 yards across ; the water over the shoal is described as thick and muddy with slight ripple. On the *Oribe* passing the shoal, *Jebel Diring* bore N.E., nearly. Position as given, lat. $27^{\circ} 27' N.$, long. $50^{\circ} 59' E.$

Note.—As this shoal lies in the direct track of vessels proceeding up or down the Persian Gulf, mariners should navigate in the locality with care.

295.—INDIA. — *Bay of Bengal*.—*Madras Road*.—*Lights on Harbour Works, and Inner Limit of Anchorage*.—Two lights are now exhibited from the outer end of the *north groin* of the harbour works, Madras. They are *fixed red* lights, placed vertically, 6 feet apart, and are visible within the limits of the port. These lights will continue to be exhibited as the works progress seaward.

Note.—Vessels arriving in Madras road should not come within the depth of $6\frac{1}{2}$ fathoms, as stone, on which they might ground, is being deposited considerably eastward of the harbour groins. Three buoys mark the limit within which vessels must not swing. At night, the lead must be the guide.

296.—JAPAN.—*Nipon Island*.—*Inland Sea*.—*Ōsaka Road*.—*Light at Kishu Gawa Entrance*.—A light is now exhibited from the outer extremity of the southern embankment at Kishu (Kidsu) Gawa entrance, Ōsaka road. It is a *fixed red* light, elevated 40 feet above the sea, and visible about 8 miles. The lighthouse, 29 feet high, is circular, built of brick, and painted in *black and white* horizontal bands. Position, lat. $34^{\circ} 37' 50''$ N., long. $135^{\circ} 27' 45''$ E.

297.—JAPAN.—*Nipon Island*.—*Gulf of Yedo*.—*Leading Light at Kanon Saki*.—A light is now exhibited from a window, 32 feet below the principal light, at Kanon Saki lighthouse, gulf of Yedo. It is a *fixed red* light, showing a *red* sector over Saratoga spit; elevated 146 feet above the sea, and visible between the bearings S. 4° E. (this bearing leads about 2 cables westward of Saratoga spit buoy) and S. 22° W., from a distance of about 7 miles. Variation, $3\frac{1}{4}^{\circ}$ W.

298.—AUSTRALIA.—*Queensland*.—*Torres Strait*.—The following information relating to Somerset, and Thursday island, Torres strait, is extracted from a report presented to the Queensland Government, 1878,

Somerset.—The Government establishment has been transferred to Thursday island, but a private firm occupies the buildings and sheds for a pearl fishing station. The mail steam vessels have ceased calling, and it is no longer the head quarters of the pearl fishery. At port Albany, opposite Somerset, there is also a pearl fishing station, consisting of sheds, &c. There are several fishing boats belonging to this and the station at Somerset.

Thursday Island (Wai-ben).—The settlement at Thursday island is on Vivien point, the south-west extreme of the island, and consists of some half dozen detached buildings, including the magistrate's house on a commanding knoll about 50 feet above high water, a court house, police quarters, &c., with a few scattered buildings to the eastward. The site of the township extends for a mile along a sandy beach opposite the anchorage, rising gradually to the summit of a ridge extending east and west. Thursday island will be found more convenient than Somerset as a centre for the pearl shell fishery, which appears to have obtained a permanent character. A small sailing cutter which also answers

for a pilot vessel is attached to the Government establishment for visiting the neighbouring islands and supervising the fisheries. The fishing is carried on in small vessels varying in size from 3 to 30 tons; the islanders and natives from the neighbourhood being employed, many of them have acquired great skill as "apparatus" divers, and earn very good wages. There is also a prospect that a demand for some of the commodities of the settlement may be stimulated in New Guinea in exchange for the products of that island. Already, many of the articles which constitute the equipment of the native pearl fishers find their way across Torres strait.

Ellis Channel, which is the direct channel from Thursday island to cape York, not being adapted for vessels drawing more than 16 feet water, the mail steam vessels will have to enter and depart by Normanby sound, which involves a detour of 10 miles, but to compensate for this the anchorage will no doubt prove to be much safer than that at Albany pass.

Wai-weer Islet, 2 miles W.N.W. from Vivien point, is occupied as a fishing station. A flag-staff and signal station is on its summit, at about 45 feet above the sea.

Goode Island (Palilug).—On the summit of Goode island about 250 feet high, there is a flag-staff and signal station, the house for the signal man being about 50 feet below, and facing the north-west. From the station, around which the wood has been cleared, there is an uninterrupted view of both the ocean and the islands, and all vessels passing through either the Prince of Wales channel or Normanby sound must be sighted.

299.—UNITED STATES.—*Virginia*.—*Nansemond River Light-station*.—On and after November 1; 1878, a *fixed red* light, illuminating 270° of the horizon, will be shown from an hexagonal screw-pile lighthouse, recently erected at the mouth of Nansemond river, Virginia. The structure rests on seven piles, in $5\frac{1}{2}$ feet of water. The light is 38 feet above mean low water, and visible 11 miles. The house is painted white; lantern, red; foundation and roof, brown. From it Fort Monroe bears N.E. $\frac{3}{4}$ E., $8\frac{1}{4}$ nautical miles; White Shoal Light bears N.W. by N. $\frac{1}{4}$ N., $7\frac{1}{2}$ nautical miles; Craney Island Light bears E. by S. $\frac{1}{2}$ S., $5\frac{1}{4}$ nautical miles. Approximate position, lat. $36^{\circ} 54' 52''$ N.; long. $76^{\circ} 26' 32''$ W.

A *fog-bell* on the north front of the house will be struck by machinery at intervals of seven seconds during thick and foggy weather.

300.—UNITED STATES.—*New Jersey*—*Signal Buoy off the end of Brigantine Shoal*.—An automatic signal buoy, painted black, and giving blasts of a whistle at short intervals, has been moored off the end of Brigantine shoal, coast of New Jersey, in 8 fathoms, low water. Magnetic bearings and distances of prominent objects are as follows :—Tucker's Beach lighthouse, N. $\frac{1}{2}$ E., $7\frac{1}{2}$ miles; Cassandra buoy N.W. by W., 3 miles; Absecum lighthouse, W., $6\frac{1}{2}$ miles; vessels should pass to eastward of this buoy.

Note.—There are shoal spots and several sunken wrecks outside of the Cassandra buoy.

Under the Red Ensign; or, Going to Sea, by Mr. Thomas Gray, of the Board of Trade, has been already very successful. Some of the Committees of Training Ships have decided to place a copy in the hands of each boy on going to sea, as a means of continuing the moral education begun during the period of instruction and training. Many of the thoughtful and intelligent amongst ship-owners have also supplied copies to the ships in their respective fleets; and although it does not in any way profess to be a religious book, its manly and moral tone has gained for it the approval of Seamen's Missions and other societies interested in the welfare of seamen. Those of our readers who have not yet procured a copy of this little book would do well to obtain one, for although addressed mainly to boys, there is in it an abundance of advice and information that merits, and will find, especial favour on the part of masters, officers, and owners of ships. The book is entirely unsensational, and in this respect it bears a marked contrast to most works which aim at the improvement of seamen. A shilling edition has been issued, which can be obtained of any chart-seller, and at Messrs. Smith & Son's bookstalls; but the two shilling edition, with its pretty and appropriate binding, is preferable for permanent use.

OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1878.

(*This List is completed to the 18th of each Month.*)

302. *Summerlee*, s.s. ; iron ; built in Glasgow in 1877 ; owned by Messrs. Neilson of that port ; tonnage, 882 ; Cardiff to Rochefort ; coals ; suffered considerable injury from an explosion in her hold by which the master was killed, August 24, 1878. Inquiry held at Cardiff, September 23, 1878, before Jones, Stip. Mag., Pickard and Castle, N.A. Casualty caused by an explosion of gas arising from coal taken in in a damp state, and from no precautions having been taken for the proper ventilation of that part of the vessel in which the coals were stowed.

303. *Cybele*, s.s. ; iron ; built at Govan ; owned by John Donaldson and others ; tonnage, 1,286. Inquiry held at Liverpool, October 2, 1878, before Raffles, Stip. Mag., Harris and Ravenhill, N.A., as to the cause of an explosion which took place on board the vessel by which one man was killed and three others injured. The Court found that the accident was due to the peculiarly hollow construction of the horn brackets cast on the cover of the main stop valve chest, and from one of the engineers having unintentionally turned the wheel the wrong way. The Board of Trade Surveyor stated that he would not have passed the machinery had he known that the brackets were hollow.

306. *Black Eagle* and *Atlas* ; the former an iron screw yacht ; built at Dumbarton, in 1858 ; owned by Mr. Fisher, of Barrow-in-Furness ; tonnage, 15 ; at the time of the accident was returning from a pleasure trip ; the latter a twin screw yacht tug ; built at Rutherglen, 1872 ; owned by the Furness Railway Company ; tonnage, 26 ; engaged towing vessels ; in collision, Aug. 27, 1878, at Barrow-in-Furness when a child was drowned. Inquiry held at Barrow-in-Furness, September 18, 1878, before Fell and Schneider, J.P., Grant and Wilson, N.A. Casualty due to the *Black Eagle* carrying no masthead light, and to her side lights being invisible at two miles ; also to the master deliberately

departing from the rule of the road in crossing the channel in view of the red light of the approaching steamer.

308. *Acklam* and *Emerald*, the former iron ; built at Middlesborough, in 1876 ; owned by E. W. Swan and others ; tonnage, 507 ; Drontheim to Lowestoft ; sulphur ore ; the latter also iron ; built at Dundee, 1877 ; owned by P. M. Duncan and others ; tonnage, 617 ; London to Sunderland ; ballast ; in collision off Flamborough Head, September 6, 1878. Inquiry held at Dundee, September 25, 1878, before Lacon and Walker, J.P., Powell and Ward, N.A. Casualty due to a thick fog, and to no default on the part of either master, Certificates returned.

309. *Lumsden* ; iron ; built at Stockton-on-Tees, in 1869 ; owned by Charles H. Wilson ; tonnage, 1,212 ; Hull to Cronstadt ; passengers and coals ; stranded at Thyboren, Coast of Jutland, July 15, 1878. Inquiry held at Hull, before Travis, Stip. Mag., Knox and Sceales, N.A. Casualty due to the default of the master in not using the lead when approaching the coast. Certificate suspended for three months.

Democrat, s.s. ; iron ; built at Sunderland, 1872 ; owned by Mr. Richd. F. Bright and others, of Liverpool ; tonnage, 798 ; Lisbon to Glasgow ; ballast ; lost on the Isle of Man, September 6, 1878. Inquiry held at Liverpool, September 23, 1878, before Raffles, Stip. Mag., Grant and Wilson, N.A. Casualty occasioned by the negligent navigation of the master in not using the lead or log. Certificate suspended for six months.

OFFICIAL INQUIRIES ABROAD.

Albatross and *Madura* ; in collision. Inquiry held by the Victoria Steam Navigation Board, Oct. 18, 1877. Mate of *Albatross* to blame. Certificate suspended for three months. Engineer severely censured.

Alexandra ; stranded near Rabbit Island, Coast of Victoria. Inquiry held by Steam Navigation Board, April 10, 1878, and case handed over to Government for criminal investigation. Master and mate convicted of attempting to scuttle the vessel. Former sentenced to three years, and latter to eighteen months hard labour.

Carleton, barque; Yarmouth; lost on reefs of Browse Island. Inquiry held at Mauritius. Casualty due to the parting of cable. Master's certificate returned.

Alice Muir, barque; took fire in Port Louis Roads. Inquiry held at Mauritius. Casualty due to spontaneous combustion.

Bismark, schooner; Sydney; lost at the mouth of the River Buccra, when in tow of a steamer. Accident caused by the warp parting whilst crossing the bar.

Resolute, schooner; stranded at Kingston, Lacepede Bay, June 11, 1878. No blame attached to master and mate.

Elsie, schooner; stranded at Kingston, Lacepede Bay, June 11, 1878. No blame attached to master or mate.

Dahlia; put into Algoa Bay with damage to rudder from the effects of a severe gale of wind. Inquiry held at Port Elizabeth, June 19, 1878. Master justified in putting into the nearest port. Certificate returned.

Knight of Snowdon, barque; lost on a reef north-west of Cape Santiago, Island of Luzon, June 12, 1878. Inquiry held at Hong Kong, June 27, 1878. Master and mate guilty of negligent navigation. Master's certificate suspended for three months, and mate's for the same period.

Lady Elizabeth, barque; stranded at the entrance of Swan River, June 30, 1878. Inquiry held at Freemantle, July 17, 1878. Master committed errors of judgment. Certificate returned.

Luzon, barque; lost on the reefs south of Morne Brabant, July 12, 1878. Inquiry held at Mauritius, July 30, 1878. Master exonerated from blame, and the Court expressed admiration at his heroic conduct during the trying circumstances, as also of the conduct of one of the apprentices who so bravely assisted him. Certificate returned.

Millewa, ketch; lost in consequence of missing stays and dragging her anchor whilst attempting to get into Kiama. Inquiry held at Sydney, July 22, 1878. Master free from blame.

Glamis Castle, s.s.; stranded on a shoal near Island of Stokong, June 30, 1878. Inquiry held at Singapore, July 23, 1878. Master guilty of imprudence in taking his ship into such dangerous proximity to the land. Censured. Nautical Assessor differed

from the Court and considered that the master was justified in the course he took.

Ardour, barque; put into Algoa Bay having sustained damage in a gale of wind. Inquiry held at Port Elizabeth, August 30, 1878. Master justified in seeking the shelter of the nearest port. Certificate returned.

Warrior, barque; put into Algoa Bay leaky, July 25, 1878. Inquiry held at Port Elizabeth, August 3, 1878. Master justified in seeking the nearest port. Certificate returned.

Juliet, barque; lost on Staten Island, August 1, 1878. Inquiry held August 10, 1878. Master free from blame.

Caledonian, barque; lost in Table Bay, July 19th, 1878. Inquiry held at Cape Town, August 29, 1878. The master (who lost his life in attempting to save others), fully exonerated from blame.

Zoila, barque; put into Algoa Bay having sustained severe damage in a gale of wind. Inquiry held at Port Elizabeth, August 29, 1878. Master used a wise discretion in seeking shelter in the nearest port. Certificate returned.

Lady Allan, ship; abandoned in lat. 36° 36' S., long. 24 E., July 22, 1878. Inquiry held at Port Elizabeth, August 29, 1878. Master and crew justified in abandoning the vessel. Certificate returned.

Emma and *Goolwa*, barques; in collision, by which the *Emma* was sunk, August 1, 1878. Inquiry held at Amoy, August 3, 1878. Master of *Goolwa* free from blame. Certificate returned.

INSTRUCTIONS TO SUPERINTENDENTS OF MERCANTILE MARINE OFFICES.—*N.B.*—The instructions contained in this Circular are more especially addressed to those Superintendents of Mercantile Marine Offices who have been appointed by the Secretary of State for India in Council as Superintendents for the transfer of Lascar Seamen.—ILL-TREATMENT OF LASCAR SEAMEN.—Board of Trade, Marine Department, August, 1878.—The attention of the Board of Trade has been called to certain cases of gross ill-treatment of Lascar crews, serving on board British vessels trading between India and the United Kingdom, and others in which the provisions

contained in the Articles of Agreement relating to food, clothing, &c., have been entirely ignored by the masters. With a view of checking such practices, and to reducing as far as possible the chances of the offenders escaping punishment, the Superintendents of Mercantile Marine at those ports to which ships carrying Lascar crews usually resort, should immediately on the arrival of any vessel, the crew of which is composed partly or entirely of Lascars, make or cause to be made such inquiries among them as may be practicable, for the purpose of ascertaining whether they have been properly treated, and whether the provisions in the Articles of Agreement have been complied with. A report of the result of such inquiry should be sent to this Department forthwith.—T. H. FARRER, Secretary ; THOMAS GRAY, Assistant-Secretary.

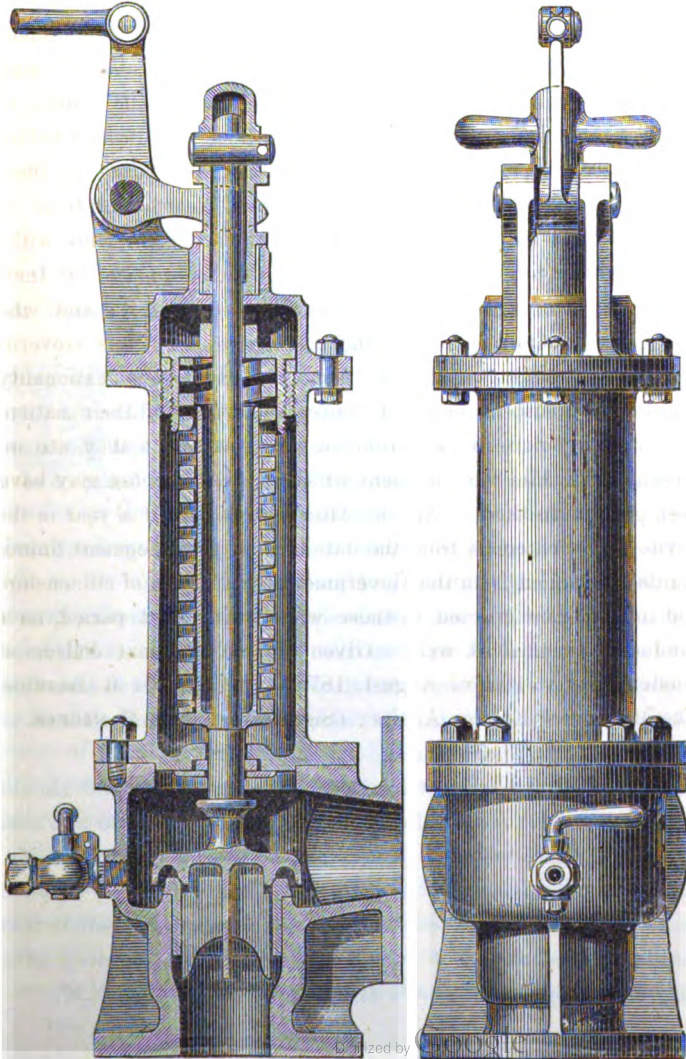
INSTRUCTIONS TO EXAMINERS.—SERVICE AS 2ND MATE TO BE SUBJECT TO CERTAIN CONDITIONS EQUIVALENT TO SERVICE AS 1ST MATE FOR THE PURPOSE OF QUALIFYING FOR EXAMINATION FOR A MASTER'S CERTIFICATE.—Board of Trade, Marine Department, August, 1878.—On and after the 1st August, 1878, the following regulations shall be substituted for the regulation now in force relating to the amount and class of sea service required of a candidate for an ordinary master's certificate, viz.:—A master must be twenty-one years of age, and have been either six years at sea, of which one year must have been as first or only mate, and one year as second mate, or he must have been six and a half years at sea, of which two and a half years must have been as second mate, during the last twelve months of which he must have been in possession of a first mate's certificate.—T. H. FARRER, Secretary, THOMAS GRAY, Assistant-Secretary.

EMIGRATION TO GUATEMALA.—Board of Trade, Marine Department, October 18, 1878.—The Board of Trade have received through the Secretary of State for the Colonies the following translation of a Decree of the Government of Guatemala affecting immigrants into that country:—Decree No. 216.—J. R. Barrios, General of Division, and President of the Republic of Guatemala, Considering : 1st. That the Decree of the 2nd of March of the

present year determines that all immigrants who may come to the Republic at the expense of or assisted by the Government, must renounce their nationality and all their rights as foreigners at the first port of the Republic they touch : 2nd. That these provisions may offer difficulties because some immigrants may refuse to make this renouncement after having received the said funds or assistance : I decree : Art. 1st. The renouncement of nationality and rights of foreigners shall be made at the place of departure of those who with the aid of funds or assistance of the Government of Guatemala shall immigrate to this Republic ; the same being carried into effect in accordance with the laws of the nation to which the said immigrants may belong, and shall be ratified before the consuls or consular agents of Guatemala, exhibiting to them the document that may have been granted authorising them to renounce their nationality : Art. 2nd. The foreigners who, without having renounced their nationality at the place of their departure, shall arrive on the territory of Guatemala, and who may wish to obtain lands or other advantages from this Government, shall, before obtaining them, renounce their nationality before the minister, chargé d'affaires, or consul of their nation, and ratify it before the governor of the department they are in, presenting to him the document which for that purpose may have been granted to them : Art. 3. After having passed a year in the territory of Guatemala from the date of their renouncement, immigrants may solicit from the Government a certificate of citizenship, and this shall be granted to those who, during that period, have conducted themselves well. Given at the National Palace at Guatemala, the 19th of August, 1878.—(Signed), J. R. BARRIOS, The Minister of Foreign Affairs ; (Signed), LORENZO MONTUFAR.

SPRING SAFETY-VALVE COMPETITION.

Owing to the sad death of the Secretary of the Committee of Umpires, we have not been able to publish the details of the tests as we had hoped to do, but after some trouble have been able to gather the following details concerning the performance of the successful valve :—



Eight valves entered for the Editor's Prize of £100, and the drawing shows the valve "Vena Contracta," for which the prize has been awarded.

CONDITIONS OF THE TEST.

Diameter of Valve	...	...	...	...	3"
Do. of Waste Pipe...	...	...	...	...	3"
Area of Grate	...	...	...	...	14 sq. feet.
Rate of Combustion per sq. foot of grate per hour	...	...	...	...	20 lbs.
Do. of Evaporation per lb. of coal	...	...	...	...	8½ lbs.
Temperature of Feed Water (constant)	...	...	...	...	100° Farht.
Do. of Waste Gas in smoke box	...	...	...	...	670° do.
Pressure at which Valve was loaded	...	...	...	...	60 lbs.
Do. in Box above Valve while blowing	...	...	...	...	4 lbs.
Do. in Waste Steam Pipe, 4 ft. above Valve	...	...	...	...	3 lbs.
Duration of Test	...	...	...	...	One hour.

The whole of the steam generated had to pass through the valve, and the following is the result :—

On the gauge showing 60 lbs. the valve went off. The gauge instantly started to go gradually back to 59·4 lbs., when the valve closed tight; the time occupied being 13 seconds, and the mean difference between the greatest and least pressures being ·6 of a pound. (There being no accumulation whatever.)

The valve repeated this cycle of operations during the hour's test with unvarying regularity of pressure and time.

The time was taken simultaneously by all the arbitrators from a 15" diameter dial clock fixed on the wall, having a second hand moving round its periphery, and they were unanimous in awarding the prize to "Vena Contracta," which has since been claimed as the valve of Mr. Thos. Adams, of Manchester.

Mr. Adams having expressed his desire that the £100 should be applied to some charitable purpose, it was suggested to him that the late Secretary had left three orphan children, whereupon Mr. Adams at once requested that the amount might be applied for the benefit of the children. It affords us great satisfaction thus to be the means of paying a tribute to the memory of a gentleman strictly honourable and hard-working.—Ed. N.M.

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FORTY-SEVENTH YEAR.

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GOVERNMENT SUPERVISION AND PRIVATE RESPONSIBILITY.

THE question of ascertaining the best and most efficient mode of preventing accidents that are likely to endanger human life, is one to which public attention has been somewhat forcibly drawn by the recent disaster on the river Thames. It would seem that in spite of all that has been done for the purpose of securing immunity from risk, so far as maritime accidents are concerned, we are still a long way from the desired goal. In the case of the *Princess Alice* and *Bywell Castle* collision, it might reasonably be inferred that the State had taken every possible precaution for the prevention of accident. It had granted certificates showing the professional fitness of the officers in charge of both vessels, whilst in the case of the passenger steamer it had provided another certificate showing that she was properly constructed, in sound condition, and quite capable of carrying all the passengers on board. Yet in spite of all this an accident took place, and at least six hundred persons were drowned. In the face of such a mishap it is not surprising that public attention should be directed with Argus-eyed vigilance in search of means for avoiding the recurrence of such disasters.

Yet in this case popular opinion seems to be somewhat at fault for a remedy, seeing that everything was managed in accordance with State regulations.

The question whether Government supervision and management constitute the best means of securing the public safety, is one that has often been discussed in the pages of the *Nautical Magazine*. The subject is of such importance, however, that no apology need be offered for its revival. So far as the material prosperity of the country is concerned, there are few questions which exceed this in importance, whilst there is no subject more liable to what may be termed panic and emotional legislation. We all remember the outburst of popular feeling which took place two or three years since when the cry arose that overladen and rotten ships were being systematically sent to sea, and the narrow escape of the whole of our Mercantile Marine from being placed under Government management; and if popular sympathy is thus ready to exert itself for the supposed benefit of seamen, it is evidently far more likely to be aroused when the safety of the ordinary public is involved. But, in addition to the danger to be apprehended from hasty and ill-considered legislation, there is grave reason to fear that popular opinions on subjects like these are not invariably clear and well defined. In cases of deaths caused by preventable accidents, for example, the frequency with which Coroners' juries return verdicts of "Accidental Death," coupled perhaps with mild censures on the persons really to blame for the mishap, shows that popular notions with regard to the responsibilities of private individuals are somewhat crude and ill-formed. If a man were to fire off a gun at random in the street, and "accidentally" cause the death of his neighbour, a Coroner's jury would have no hesitation in returning a verdict of manslaughter; but if the same man owned a factory, and worked a worn-out steam-boiler at a dangerous pressure, and if an explosion took place, causing the deaths of twenty persons, the verdict would almost certainly be one of "Accidental Death"—followed possibly by a moderate reproach, and a recommendation that the Government should make itself responsible for the safe condition of all steam boilers in future. Coroners' juries rarely consider that indirect negligence

can ever be considered culpable. In the case of direct acts of carelessness and neglect, such as that of a railway pointsman, who by an oversight causes a fatal collision, their decisions do not as a rule lack in severity; but when fatal accidents arise from the use of defective appliances, or worn-out material, their findings refer everything to an unfortunate combination of chances, whilst in the latter case the opportunity is generally taken for enunciating the opinion that the State would do well to prevent such mishaps in future.

The reasons to be urged against the interference of the State in the management of the affairs of private individuals are tolerably well known to those who have given the subject a fair amount of consideration, or who have perused the articles on this subject which have from time to time appeared in these pages. In the present day, however, it unfortunately happens that the character of legislation is often largely influenced by the opinions of persons who are not in the habit of very carefully examining the questions on which they express decided views. That it is the business of the State by direct interference to prevent the occurrence of accidents which are plainly preventable, is an inference that readily suggests itself to those who make no more than a superficial examination of the subject; and unless a vigorous attempt is made to increase and more clearly define the responsibilities of private individuals, there can be little doubt that, before another generation has passed away, the State will find itself charged with the practical management of every undertaking in which serious bodily risk happens to be largely involved. Already we see the Government burdened with the sole management of passenger steamers, and the partial management of railways, mines, ordinary merchant ships, and factories, and if a radical change does not take place in the present tendency of public opinion, it is perfectly certain that the system of State management will rapidly become more extensive.

It appears to us that the contingency above mentioned can hardly be avoided unless a considerable revolution is made in the existing condition of the laws affecting the principle of individual liability. For it cannot be denied that, as matters now stand,

there are serious difficulties in the way of fixing the responsibility for safe management on the shoulders of private persons—more especially in cases where the amount of compensation that can be claimed by those who have been injured happens to be small, or in which the criminal negligence does not happen to be particularly glaring. There are statutes in existence which provide the means for obtaining civil remedies in most cases of injury received through culpable neglect or carelessness, it is true, but the expense of carrying them into effect is unfortunately so great, that no person would dream of enforcing them unless with a prospect of obtaining substantial damages, whilst so far as the criminal law is concerned, it seems to be nobody's business to institute proceedings.

For the individual whose claim would be covered by £20, or even £50, for example, it would be an extremely hazardous venture to commence proceedings if the evidence of scientific or skilled witnesses were necessary in order to substantiate the case; for even if the suit proved successful, the major portion, if not the whole, of the damages would be swallowed up in legal expenses. Moreover, it generally happens that compensation for injuries has to be claimed from powerful companies, or from persons with large resources, who do not hesitate to appeal to the higher tribunals when suits have been decided to their disadvantage by the lower Courts; and the knowledge that an action for damages may possibly involve a double, or perhaps three-fold, trial, is more than enough to prevent minor claims from being put forward. And this brings us to what would seem to be the only solution of the difficulty which attends the existing condition of the law. It appears to us that the true province of the State should lie, not in assuming a dangerous responsibility, and hampering private enterprise by imposing checks on tentative improvements, but in aiding those who are unable to protect themselves, by fixing the responsibility for preventable accidents on those to whom it primarily belongs. In short, in matters of this kind, it should facilitate the recovery of compensation, and rigidly enforce the criminal law in all cases in which criminal carelessness or negligence is displayed. It is admitted on all hands that

principle of individual liability which pervades the English law has worked fairly well in the main as a protection for the public in matters in which the common safety is involved ; whilst its main advantage has undoubtedly been that it has left individual enterprise untrammelled by any hard and fast rules. And it seems to us that the one great principle which should govern the action of the State in future should be that of leaving private individuals to manage their own affairs according to their own judgment, and in seeing that they are properly punished when it can be shown that they have managed them in such a way as to have needlessly endangered life or limb.

To most persons the proposal to place the State in the position of prosecutor in civil cases, as well as in those in which criminal negligence has been displayed, may, perhaps, seem somewhat revolutionary. It may, perhaps, be urged that if it is the business of the State to see that no person is physically injured, without just compensation being awarded, it must also be its duty to see that a remedy is obtained when only personal rights and interests have been injured ; in fact, that it is for the Government to take upon itself the entire administration of the law. But it must be remembered that the subject we are now discussing is an exceptional one. As we have just pointed out there are obstacles which effectually prevent private individuals from asserting their claims unless they can do so with a tolerable certainty of obtaining heavy damages. And cases of this latter kind must necessarily be comparatively few. In addition to this particular consideration, however, there is what may be termed the alternative contingency of universal State control to be borne in mind ; and unless the enforcement of the principle of individual responsibility is rendered more easy and more effective than it is under present circumstances, it is morally certain that this latter alternative will rapidly become an accomplished fact.

The principle of throwing upon the Government the onus of prosecuting in certain civil cases for the purpose of securing compensation for persons who have been injured, is one by no means new to the British Statute Book. The 507-14 Sections of the Merchant Shipping Act, 1854, and 54th Section of the Act of 1862, empower the Board of Trade to take proceedings on behalf of

persons who have lost relatives by shipping casualties, specifying the maximum amount which can be awarded in such cases, and barring private individuals from commencing actions on their own account until they have obtained from the Board an official intimation to the effect that the prosecution of a suit at the public expense is not contemplated. These provisions have become dead letters, it is true, whilst the general tendency of subsequent legislation has undoubtedly been to develop the principle of official supervision, not only in connection with merchant shipping, but also with regard to other undertakings in which the safety of human life is involved. But the fact that the law in question has rarely, if ever been enforced, by no means shows that its main principle is unsound. It has failed for the simple reason that the shipowner, if he has reason to believe that proceedings are likely to be taken against him, can shield himself by taking proceedings on his own account in the Court of Chancery, and obtaining from that tribunal a decision as to the amount of his liability. It may, however, be pointed out that in the great majority of cases the Board of Trade would place itself in a somewhat anomalous position by taking legal steps on behalf of the relatives of passengers who lose their lives by shipwreck, seeing that it is compelled to become responsible for the general efficiency of every British passenger steamship afloat. It would be absurd for the Board to put forward the plea that a passenger steamer had been lost through defective construction, or that lives had been lost through insufficient or defective equipments having been supplied, since by so doing it would condemn its own previous action.

It appears to us that the danger of universal State control, which at the present time so seriously threatens several of our leading industries, can only be avoided by a radical change in the existing mode of defining and establishing the responsibilities of private individuals, and by sweeping away the half-and-half system of Government supervision now in force. The idea that official surveys constitute the most effectual means of preventing accidents which are preventable, is, in our opinion, as insinuating as it is dangerous. On hearing that lives have been lost through carelessness or neglect, the public, like frightened children, too often appeal to the

Government to take measures against the recurrence of a similar disaster, quite losing sight of all ulterior considerations. The present policy is one of meddle and muddle; in short, in homely words, it is "neither fish, flesh, nor good red-herring." But there are 'unmistakeable signs that it will not always be thus. The system of State control is slowly but surely extending itself over railways, mines, merchant shipping and factories, and unless some alternative means of increasing the public security are adopted, Government supervision will soon have established itself so firmly as to prevent almost the possibility of reform.

It has already been pointed out that the main difficulties which at present interfere with the working of the principle of individual responsibility are to be found in the expensive, cumbrous, and uncertain process by which claims for compensation have to be enforced. And the one plain remedy for this particular evil that suggests itself is that the onus of proving and fixing such responsibility should devolve upon the State in all cases of casualties of a serious nature. In order to thoroughly carry out a system of this kind it would be necessary to establish a specially constituted tribunal, whose business would consist not merely in investigating casualties, but also in assessing and awarding damages. The courts of inquiry which at present investigate shipping, mining, and railway accidents are extremely useful as a means of ascertaining the causes from which casualties arise, and of disseminating information as to the best mode of preventing their recurrence, but here their province ceases. They are of little or no assistance to those who desire to establish their title to compensation, as in order to make good a claim of this kind it is necessary to try the whole case *de novo* before an entirely different tribunal. What is required is that there should be a court of inquiry, composed of a judge, skilled assessors, and a jury, and that it should be the duty of this tribunal to investigate every serious casualty, whether by sea or land, and to award and apportion such compensation as it might consider to be due either to those who receive injury or to the relatives of those who may have lost their lives thereby.

It is needless to say that in order to carry out a system of this kind, a radical change in the existing law of master and servant

would become necessary. As it now stands, the law gives the servant no claim in case of injury received through negligence, either on the part of the master or on that of a fellow-servant; but, although there may be good reasons why it would be impracticable to place *employés* on a footing precisely similar to that of other persons, there is nothing to prevent a considerable modification in their present position from being made. To enact that the master should be held responsible for every act of negligence on the part of any one of his servants by which another servant happened to receive injury, would be to widen his liability to an indefinite extent, and at the same time open up the way to endless frauds and impositions. And for these reasons it would undoubtedly be necessary to limit the claims of servants to cases in which mismanagement on the part of the master, or of his actual representatives, could be shown to be the primary cause of the accident; but with this reservation, there is no reason why *employés* should not be entitled to claim compensation as well as the outside public.

However, we should regard any amendment of the law of master and servant as little better than useless unless it were accompanied by the establishment of a Court of Inquiry of the kind above referred to. The difficulties which now attend the preferment of claims when the amount in dispute happens to be small, would nearly always be present in the case of claims made by *employés*, since it would rarely happen that servants could expect to recover sufficient damages to warrant them in entering on an expensive lawsuit on their own account.

If a reform of the kind here indicated were carried into effect, a most powerful incentive to the safe and efficient management of every undertaking which involves personal risk, either to the general public or to *employés*, would at once be called into existence. So far as the public are concerned, this incentive is supposed to be ever present, even under the laws now in force. But in a great number of cases its existence is little better than a legal fiction; whilst, as regards *employés*, the question of safety is (with one or two exceptions) held to be a matter of no importance whatever. For the most niggardly parsimony, or the grossest mismanagement,

involving death or bodily injury to servants, the law rarely affords any redress; and it is therefore hardly to be wondered at that appeals should be made to the State to take the bull by the horns by laying down definite regulations for preventing the abuses that must inevitably arise under such circumstances. On the part of employers, it is probable that considerable opposition would be offered to any proposition that would widen their responsibilities, but it must be remembered, in the first place, that this question is one which affects the interests of the community at large rather than those of any particular class, and in the second, that unless legislation takes the direction of extending and more clearly defining the responsibilities of private individuals it must inevitably tend in that of universal State control. The public voice is becoming more than ever the *vox Dei*, and the time seems to be rapidly approaching when the occurrence of fatal casualties arising from the neglect to adopt efficient appliances and from careless management, will no longer be tolerated. And if matters are left to settle themselves under the influence of outbursts of popular feelings there can be no doubt as to the nature of the settlement that will be made.

As a means of adding to the general security of the public, and of those who are engaged in risky or dangerous occupations, the appointment of a public prosecutor is a reform most urgently required. However gross many have been the negligence or carelessness shown either by masters or servants, it is only in exceptional instances that anything like adequate punishment is awarded. The officers and engineers of merchant ships may be punished by the suspension of their certificates, it is true, while as regards miners and railway *employés*, specific penalties and punishments are provided for certain offences; but with these exceptions it rarely happens, in the case of risky employments, that the law is brought to bear against those whose carelessness or mismanagement has caused loss of life. Not until 1876 was it made a criminal offence to send an unseaworthy ship to sea, and even when the Merchant Shipping Act of that year was passed the country appeared to be in grave doubt as to whether shipowners ought not to be entirely exonerated from all responsibility with

regard to the safe management of their affairs, by the enforcement of a gigantic system of State surveys. There seems to us to be no room for any reasonable doubt that a thorough administration of the principle of individual responsibility contained in the 4th Section of the Act of 1876, and the knowledge on the part of ship-owners that inefficient or negligent management might lead to heavy pecuniary liabilities (or perhaps to a criminal prosecution), would constitute a far more effective means of preventing unscrupulous practices than a system of Government survey. And the same may be said of every undertaking or occupation in which the safety of human life is involved. It would, perhaps, frequently occur that prosecutions and investigations, such as we here propose, would end either in failure or with no definite result, but when such happened to be the case, it would be a grave mistake to suppose that the machinery provided was at fault. If the value of the services of every policeman in the kingdom, for example, were to be estimated by the number of law-breakers or criminals he happened to detect and capture, the result would be anything but satisfactory; but as we all know, the influence of the policeman is more moral than real. The knowledge that crime will probably be followed by detection and punishment is the grand deterrent to would-be evil-doers, for it cannot be supposed that the number of actual criminals in the country, at any given time, represent anything like the number of those who would readily commit crimes if they believed they could do so with impunity. And in the same way the money that would be spent on investigations, which might end without a clear verdict, or on criminal proceedings, which might fail in their purpose, would be by no means thrown away. It would have been expended in creating a moral influence which would be far more effective as a means of securing efficient management than any system of vicarious direction that could possibly be devised. If the amount which is spent each year on the various surveys and inspections now carried out by the State were utilized for the purpose of defining and fixing the civil and criminal responsibilities of those whose acts tend to endanger life or limb, the net result would, in all probability, be quite as satisfactory as that which is now obtained,

whilst private enterprise would be left untrammelled. The general tendency of legislation at the present day is to foster the notion that the State should consider it a part of its own especial business to see that risky or dangerous occupations are managed with efficiency, and the habit of looking to the State for aid, either in this or in any other particular, is one which grows with great rapidity, and without much encouragement, when once it has taken a hold on the public mind.

The law as it now stands is in a somewhat confused condition, for a system of divided responsibility pervades several of our leading industries, and the result is that the unfortunate victims of casualties and accidents stand a fair chance of coming to the ground. It would be too much to expect that private individuals can be held responsible for accidents arising in undertakings of the detailed arrangements of which Government inspectors or surveyors have expressed their approval ; whilst in this respect the Government—the representative of the Crown—"can do no wrong," nor can it recognise any claims based on the misdeeds or oversights of its agents. The State has made itself entirely answerable for the efficient construction and equipment of every British passenger steamship, and partially answerable for the safety of railway travellers, and for the proper management of mines and factory machinery. It has already been pointed out in the pages of this magazine that if this partial control is justifiable, a more thorough system cannot possibly be otherwise. But if we may judge from the signs of the times, there is good reason for coming to the conclusion that the anomalies here referred to will rapidly become less striking, for every succeeding year seems to add to the number of the believers in the advantages of State control.

At the present time the chief hope for the future would seem to be that the indomitable spirit of enterprise which constitutes one of the chief characteristics of the English race will render more or less nugatory any attempts to establish hard and fast systems of supervision, and reduce State regulations to little more than dead letters. As regards the supervision of steam passenger ships now exercised by the Board of Trade, we suspect that that department has a somewhat arduous task in defining, as it necessarily must do,

what may and what may not be deemed safe construction and proper and efficient equipment. Any system of Government survey, however ably conducted, must of necessity tend to place obstacles in the way of innovations and changes, and with only a portion of the Mercantile Marine under its direct control, we imagine the Board must find it no easy matter to keep its regulations *au courant* with the improvements which are ever in progress of development in the portion which lies beyond its direction. If it were entrusted with the care of the entire Mercantile Navy, it would experience considerably less difficulty in enforcing compliance with stereotyped regulations than under a partial system like the present, since it would then be in a position to absolutely forbid the introduction of novelties.

The question of ascertaining and clearly defining the best and most efficient means of providing for the safety of the public and of *employés* who are engaged in risky occupations, is one which calls for the most careful consideration. As we have already pointed out, there is a general impression abroad that matters like these have a tendency to set themselves right in practice in spite of all principles; but those who will take the trouble to look round in the world will easily see that questions which are left to be settled by popular impulses and prejudices, are quite as likely to be settled wrongly as rightly. And that the question now under consideration will settle itself by the relegation of the management and control of all dangerous occupations to the State, unless it is taken vigorously in hand and dealt with on a broader basis than that of popular sentiment, it is impossible to doubt. It may be that owners and employers will foresee grave dangers in a scheme which, in cases of serious accident, would invariably place them in the position of defendants in what would in reality amount to nothing less than suits for compensation conducted on behalf of the plaintiffs at the expense of the State. They may apprehend, too, that, under a system of this kind, they would run great risk of becoming the victims of extravagant and occasionally fraudulent claims. But, as regards the first of these objections, it may be pointed out that the position of owners before a tribunal of the kind we propose would be no more disadvantageous than it is

before the Courts of Inquiry which investigate serious casualties under the existing order of things. The mere legal expenses would probably be less, seeing that a single investigation would suffice, whereas it now frequently happens that a number of separate suits and trials arise out of the same case. And with reference to the possibility that fraudulent or excessive claims would sometimes be put forward we think there would be little difficulty in preventing abuses of this kind. If it were clearly understood that those who could be shown to have based their claims on wilful misrepresentation would forfeit all title to compensation, it would rarely happen that fraud of this kind would be attempted. And it might safely be left to the court to decide in what cases claims should be totally barred.

If the principle of individual responsibility were adopted we think there would be no serious difficulty in devising the mode of legal procedure necessary for its enforcement. We do not advocate its adoption on the ground that the present system is lacking in uniformity, but in the belief that under its influence the highest attainable degree of security is to be reached, whilst under its working private enterprise will be encouraged rather than checked. It appears to us moreover that the anomalies contained in the present system are doomed to be supplanted either by an extension of State supervision or by a reversion to the principle of individual responsibility. In the former we have the gravest mistrust. A system of Government control, if it is to serve the end for which it is intended, must be worked with thoroughness and vigour ; it must require the adoption of the best known appliances and methods of construction, and insist on the best known modes of management. In order to secure these objects the State will be compelled to lay down stereotyped regulations for the guidance of its officers, and these regulations will have to be regarded as laws which are not to be lightly set on one side. How such a system could be worked amidst industries in which improvements and changes are constantly in course of development, without imposing a check on further progress, it is impossible to see. And it is quite clear that unless the inspections and supervisions are carried thoroughly into effect they become nothing more than mischievous

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and expensive delusions. In the former case they must necessarily have a most deadening influence on private enterprise, and in the latter they would simply have the effect of exonerating employers and owners from all liability and of leaving the public absolutely without protection.

HOW MUST WE STUDY THE LAWS OF PROGRESSION (COURSE) OF THE PERTURBATION OF THE ATMOSPHERE?

To the Editor of the "Nautical Magazine."

IR,—In one of the articles of your esteemed Journal a till yet unknown author has called our attention, in his notes "On the Gradients and Currents of the Atmosphere," to the highest places of pressure (summits). He says the air must flow from these places all along the steepest descent, and by the rotations of the earth each particle must partake of a movement in accordance with the hands of a watch in our northern hemisphere.

Mr. Clement Ley, in his "Laws of the Winds," and especially Mr. Hildebrandson, have compared the observation of the clouds with this rule, and have insisted on the weight of these observations.

I was always persuaded that we should not neglect the places of highest pressure (summits), but thought it more desirable to seek and follow the places of lowest pressure (depression), because of the air particles meeting there not dispersing from them as from the summits, but rallying to them, and because the dispersion at the summits is, by rarefaction of the air, rendered more difficult of observation. In the vicinity of these depressions the air particles are compelled to change their inverse (according to the hands of the watch) spiral way to an elliptic or circular one. Thus they are best studied, as the charts of Washington, Copenhagen, and the last of them, published by the Meteorological Society of London (August, 1878), show us amply.

Besides these summits and depressions their relations should be held in view. Mr. Clement Ley has already given an interesting

article in the *Scottish Meteorological Journal*, Vol. II., p. 330. I gave an answer to it, and in my remarks on it in *Nature*, and in a letter to Mr. Clement Ley, called attention to the rotation of the line joining the summits and depressions in accordance with the hands of a watch, and especially to the inquiry on the forms of the depressions themselves (viz., of the *craters* we may imagine to represent these depressions) in relation to their mode and rate of passage over the surface of the earth.

Now, I think this the most interesting thing to scrutinise, the influence of the relative places of highest and lowest pressure on the way which the depression will take, and the velocity with which it will proceed. We have to study if a depression proceeds really, or if a new one is formed; we have to discover in what cases a depression originates, or is more deepened; in what cases two depressions tend to unite; and on the other hand, in what cases they are lessened and disappear.

The present note aims to fix the attention on that point. These questions are only to be solved by simultaneous observations compared with the average normal values of the indication of the instrument to which they belong. We must know not so much the real quantities of barometric pressure, of temperature, of humidity, as the variations of them from the normal quantities. Then by means of these simultaneous observations we will be able either to prepare numerical tables as I used to do in 1854, or charts, such as Mr. Hoffmeyer has published on the American example given by Espy, whose influence on the new methods of meteorology is often too much forgotten.


But the tables as well as the charts ought to be made on a much larger scale, extending over America, the Atlantic, Europe, and Asia, in order that we may see more crests of the waves and more valleys, more summits, and more depressions, more gulfs of the atmosphere at once, and that we may deduce therefrom by comparison of the tables and charts of one day with those of the following day and days, the interference of these points of actions, and the resulting way of proceeding over the surface of our hemisphere.

BUYS BALLOT,

The Superintendent of the R. D. Met. Inst.

Utrecht, 6th November, 1878.

SEA PROTESTS.

HE subject of the existing system of Sea Protests, and the abuses to which it may be, and too frequently is subject, formed some time since the subject of comment in these columns. There can be no doubt that the present system of noting and extending protests is in the last degree delusive, and may readily be converted to unfair and even fraudulent purposes. It is true that in this country a merchant ship's protest is not evidence in a Court of Law until proved in the ordinary manner, and the shipmaster who has supplied the material from which the document is elaborated, and the notary who has drawn it up, may be subjected to cross-examination as to its contents, and the manner in which it is put together; but in some foreign countries the extended protest may be employed as conclusive evidence against owners, underwriters, and others concerned in ship, cargo and freight, and it is of the last consequence, therefore, that some means shall be adopted to prevent the protest being manufactured, so to speak, by interested parties, and its being put forth as a faithful narration of facts and circumstances connected with a casualty to ship or cargo, or both. A case which a few months since came before the Assize Court at Cork, directed public attention very forcibly to this important subject, and has produced a paper from the pen of Mr. E. E. Wendt, which is worthy of attentive consideration—though the suggestions he makes for the rectification of existing abuses may in some respects be liable to adverse criticism. Mr. Wendt draws attention to the fact that sea protests in the United Kingdom can be made at any time after the arrival of the ship, thus giving to the master and owner, or others interested, an opportunity of consulting together, and of framing or causing to be framed an inaccurate or untruthful document calculated to meet some particular necessity; that when made up by the notary the protest is drawn up generally without reference to the ship's log, or without questioning any person except the master as to its contents. The

notary cannot compel the production of the log, nor can he, it would seem, swear appearers, whether masters, officers, or crew, so as to test their statements—so that, if the notary is a punctilious person, and desires to be satisfied too nicely as to the contents of the protest, nothing is easier than for the master to withdraw the business from him and place it in other hands less particular as to the contents of the document, or the manner in which it is framed. “The result of this unsatisfactory state of affairs,” says Mr. Wendt, “is, that the protest is for all practical purposes worthless. It may even be said truly that it is worse than useless, for though from the facility of its being made fraudulently, it may contain utterly untrue statements, yet it is in appearance a formal and official document; it is attested and sealed by an official functionary, and in consequence, faith is placed in it, and credit given to it by many, especially abroad, which it in no wise deserves, and instead of being a preventive of fraud, it is actually an official means by which frauds can the more readily be perpetrated. A striking fact was elicited by the case of the *Queen v. Minich*, tried as above stated at Cork. There the protest had been extended by the aid of an interpreter, the ship being Italian, and the crew entirely ignorant of the English language. The circumstances, as detailed by the crew, corresponded accurately with the record in the log, but not with the statements in the protest. The interpreter was prosecuted for perjury—but when the case was submitted to the jury it was found impossible to convict him—as, although he had been sworn by the notary, the authority of the latter to administer oaths could not be proved, and so there was no means of reaching the originator of what appeared to be a fictitious account of a maritime casualty in which a protest was framed. That such a state of things is possible in shipping transactions is unquestionably a very serious matter. The remedy, however, as Mr. Wendt justly observes, is by no means an easy matter, but he offers as a solution, or an aid to a solution of the difficulty, the following suggestions:—

“In the first place, as to what should be contained in the protest. It should in all cases give an exact and accurate transcript of so much of the ship’s log as is essential for its compilation. To this should be added such observations or explanations as the

various signatories may desire to offer and as the compiler may consider necessary to insert.

“To enable the notary, for he may still be retained as the compiler, to draw the protest in the manner suggested, greater official powers must be given to him, and at the same time stringent regulations in the stead of varying customs must be drawn up to govern his conduct of the matter. He must have authority, and moreover it must clearly be laid down as his duty, to demand the log, to summon certain members of the crew (to include at least the master, mate, and two others), to examine them and all other intended signatories separately, and, most important of all, to administer an oath to each signatory and to the interpreters when any are required.

“In order that the log-book may be of practical use, the system now obtaining in this country must be entirely remodelled, the present official log-book should be entirely abolished, and the entries therein prescribed should be made in the ship's ordinary log, which should be kept with the same care as is at present applied to the so-called official log. The use of paged and sealed log-books should be made compulsory, the log-book be written up on board every twenty-four hours, the entry be daily read over in the presence of the master, mate, and two others of the crew, and verified by their signatures. In the event of bad weather preventing the completion of this formality during any twenty-four hours, the entry when made should contain a statement to that effect.

“For every voyage of not less than seventy-two hours' duration, and for every voyage of less duration when damage to ship or cargo or both has been sustained or is anticipated, it should be compulsory upon the master to deposit his log-book with the Collector of Customs at the time of reporting his vessel, and not later than twenty-four hours after her first arrival in port; the date and time of such deposit should be noted in the log by the official receiving the report, as also the date and time at which the log is returned to the master on the final outward clearance of the vessel. These formalities might supersede the present system of *noting* protests.

“When it is required to extend the vessel's protest, the notary employed for this purpose should make to the Collector application

in writing for the log-book upon a form countersigned by the master or agent of the vessel, the log-book to be delivered to the notary only. Translations, where such may be required of log-books in foreign languages, should be prepared by the notary, or by some competent person appointed by and responsible to him, and the notary should show upon the log-book itself the portions which have been extracted or translated for the purposes of the protest. The log-book when done with should be returned by the notary direct to the Collector of Customs, together with a statement of the date when and place where the protest was extended, and of the names of the signatories and of the notary, and such statement should remain attached to the ship's report, and be accessible at all times upon written request and payment of a small fee.

"Protests to be made by foreigners not conversant with the English language should be written in parallel columns, and should be read over to the signatories in their own language.

"The protest should be a public document, and the notary by whom it is extended should be empowered to supply copies to persons requiring the same upon payment of a reasonable fee.

"A regulation that the Collector of Customs on delivering the log to a notary should register the delivery in the log, and that the notary therein-named should be the only one capable of drawing that particular protest, would prevent the possibility of an attempt to influence or coerce a scrupulous notary by a threat held out directly or indirectly of leaving him for a less punctilious one."

The main proposals here are that the official log prescribed by the Merchant Shipping Act should be abolished, and that the Collector of Customs should be made the depository of the "paged and sealed" log-books, who is to hand the same to the notary, on application, in writing, by the master or agent of the vessel. Mr. Wendt appears to overlook the fact that the "official log," as distinguished from the ship's log is, properly speaking, a record of occurrences taking place on board during the voyage, and more particularly as regards discipline and the conduct of the crew. The ship's log is a record, and generally, errors excepted, a

faithful one, of the navigation of the ship. It is from this we take it, and not from the official log, that materials are supplied for sea protests. The ship's log is commonly kept by the mate, who is responsible for its correctness. Mr. Wendt's proposal that this log should be written up on board every twenty-four hours, would, in some instances, be impossible. The ship's log is ordinarily kept upon a slate, and transferred to the log-book as the mate has leisure to do so. We should not object to a more methodical mode of keeping so important a record of the navigation of the ship. But surely the remedy for the evils connected with the noting and extension of ship's protests is a more simple matter than Mr. Wendt appears to think. Let the notary be commissioned to administer oaths, and let those who make false statements before him be liable, as of course they would be, for perjury, and take the consequences if they commit the offence. A man of Mr. Wendt's intelligence must know that applications to the Board of Trade on such a subject as the noting and extension of protests could not have any practical result. A public department has nothing to do with the arrangements by which the operations of trade are carried on by the parties concerned in them. The enforcement of contracts, and the punishment of breaches of faith and offences against public morals, pertain to our courts of law. If false statements relating to maritime casualties are made before notaries in order to make and support fraudulent claims, such conduct may, by a very simple expedient, be converted into the offence of perjury, which, when once it is committed, may be dealt with promptly by our courts of law.

“PRINCESS ALICE,”

RUN DOWN AFTER DARK IN THE RIVER THAMES
ON THE 3RD SEPTEMBER, 1878.
700 TO 800 LIVES LOST.

THE collision between the *Bywell Castle* and the *Princess Alice* is probably the most appalling shipping casualty that ever happened: and the public mind has accordingly been thrown off its balance. When between 700 and 800 lives are lost in one disaster, the public refuse to believe that so great a sacrifice can be brought about by a simple cause—a simple error. Rather than believe in the possibility of such a simple thing, the public mind conjures up all sorts of vague and impossible assumptions, and derives satisfaction from attributing blame all round to every person, public body, Corporation, or authority, having any sort of control, express or implied, over the river, the ship, the navigation, the crew, the passengers, the country, or even over the substance of which a ship is built, and the way she is put together. In the present case the state of the water in the river did not fail to receive a deal of blame. The simple facts of the case are that the *Princess Alice* was proceeding up the river, and the *Bywell Castle* was proceeding down the river, and they came into collision about the middle of the river.

At one time, and when each first saw the other, the green light of the *Bywell Castle* was exposed to the red light of the *Princess Alice*; and the red light of the *Princess Alice* was exposed to the green light of the *Bywell Castle*. If the ships were within the meaning of the rules, “crossing ships,” it was the duty of the *Princess Alice* to keep her course, and the duty of the *Bywell Castle* to keep out of the way. Assuming the “crossing” rule to apply, the question is, did the *Bywell Castle* do the right thing in the first place, that is to say, did she rely on the *Princess Alice* obeying the rule and keeping her course; and did she (the *Bywell Castle*) do the right thing in the second place, that is to say, did she port to pass a-stern? Did the *Princess Alice* keep her course,

or did she get into the way of the *Bywell Castle*, and so get run down? We call this the "view number one."

The Wreck Commissioner's Court and Assessors find that at one time the two ships were "end on" to each other, each showing her three lights to the other, and that each should have ported. Taking this view of the case, which we call the "second view," the Court hold that the *Princess Alice* was wrong, for she star-boarded, and the *Bywell Castle* was right, for she ported.

There is a third view, and it is this: At one time, just before the collision, the green light of the *Princess Alice* was exposed to the red light of the *Bywell Castle*, and the ships were then crossing, but crossing the other way, and, if the crossing rule then applied, it was the duty of the *Princess Alice* to have kept out of the way, and of the *Bywell Castle* to have kept her course.

We think it is to be regretted that the Wreck Commissioner's Court have given their decision on the second of the above views only; they might as well have given it on the third. They would, we think, have placed themselves as a Court most in the right if they had taken into account, and had given their decision on all three views. They may be right in coming to the decision from the evidence before them that the *Princess Alice* was alone to blame for the collision; but then they may be wrong in not bringing her in as blameworthy either under the first of the above views alone, or on the first and second, or on all three together. We refrain as yet from giving any opinion of our own, as the case is to be taken into the Admiralty division of the High Court of Justice.

If the crossing rule applied at the time the ships were in the position shown in Fig. 1, was the *Princess Alice* (B) required by law

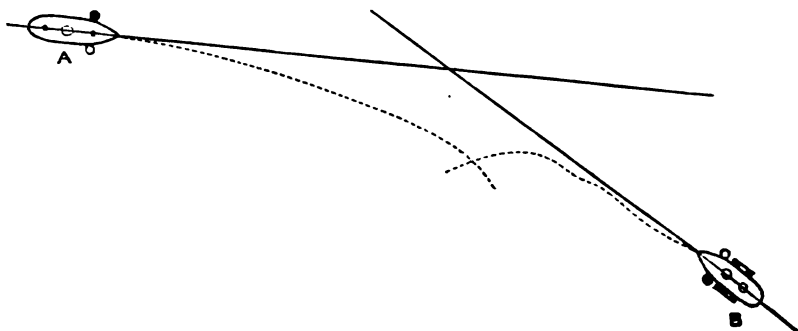


FIG. 1. Digitized by Google

to keep her course ? and was the *Bywell Castle* (A) required by law to keep out of the way ? The straight lines represent the original courses, and the dotted lines the altered courses. The reason why the altered (dotted) course of the *Princess Alice* did not make a more regular curve is that the tide, which was running down, exerted its influence on her port bow ; and it was not until the influence of the starboard helm at last overcame the influence of the tide on her port bow that the *Princess Alice* suddenly “ spun round ” and altered her course, as shown by the dotted line. Having set out the case plainly and simply as it comes out in the evidence and report, and leaving the question, “ which ship is to blame,” to be settled by a competent Court, and to be commented on by us hereafter, we proceed to draw a few practical lessons from what we may call the side issues raised in the case. The first of these is the strength of the ship.

The strength of the ship, or the want of strength of the ship, had nothing to do with the collision or the casualty. If she had been ten times as strong the blow would have destroyed her. Indeed, from the first, it was admitted in Court on the part of the owners of the *Bywell Castle*, that if the *Princess Alice* had been no stronger than a rope of sand, and if the *Bywell Castle* were nevertheless in fault for the collision, the *Bywell Castle* ought to pay. Nothing could have been more clear and straightforward than this admission in Court. There were, however, certain parties who desired to prove that the *Princess Alice* was not fit for her service, and that the serious loss of life was owing to this cause. The Board of Trade, on its part, expressed a desire, through their Counsel, that the question should be thoroughly sifted, as it had been raised. The facts, as regards the *Princess Alice*, are stated in the Report as follows :—

“ The *Princess Alice* was a paddle-wheel steamship, official No. 52,614, built at Greenock, by Messrs. Caird, in 1865, and then known by the name of the *Bute*.

“ In 1866 she became the property of the Woolwich Steamboat Company, and was subsequently transferred to the London Steamboat Company. In 1868 she had certain alterations made in her, and in 1870 was strengthened by an intercostal stringer

being placed in her ; and so she went on running as a passenger vessel in the River Thames between London and Sheerness until the commencement of 1878, when her hull, boilers, and machinery were thoroughly overhauled. The old boilers were replaced with new ones, and she was put in thorough order, under the inspection of the Board of Trade surveyors, at a cost of about £3,600.

"The dimensions of the vessel were as follows, viz. : length, 219 ft. 4 in. ; breadth, 20 ft. 2 in. ; depth of hold, 8 ft. 4 in. ; her gross tonnage being 251 tons, and her registered tonnage (after deducting engine-room space) 158 tons.

"She had two engines of the combined nominal power of 140 horse.

"Her draught of water was about 5 ft., and her speed about 12 knots per hour.

"On the 8th June, 1878, she obtained two certificates from the Board of Trade ; one for plying beyond the smooth water limits, and the other for plying within those limits. The first certificate allowed her to carry 486 passengers during the summer and 336 during the winter months, and extended from London to within a line drawn from St. Osyth Point to Foreness. The smooth water certificate extended from London to Gravesend, and allowed her to carry 936 passengers.

"She carried two boats and twelve life-buoys."

Of the collision the Report says :—

"It is agreed on all sides that the *Bywell Castle* struck the *Princess Alice* on her starboard fore-sponson, cutting through her side and entering the body of the ship to the extent of at least 14 ft., cutting through her sponson, deck beams, and paddle beam, until her stem struck the forward engine beam, which was broken short off by the blow. The main-top frame of the engines remaining uninjured.

"The aperture caused by the collision was so large that the engine-room compartment was very rapidly filled with many tons weight of water, and the middle part of the vessel, thus over-weighted and severed, sunk rapidly, causing the two ends of her to be lifted up at a considerable angle, in which position the vessel drifted with the tide down the reach, gradually sinking, for about

four minutes, till she eventually reached the bottom, at a spot about 180 yards N.N.W. from the powder vessel which is moored in Galleon's Reach.

"The *Princess Alice* by this time had become completely parted into two pieces, the fore-end turned round, head down stream, and in a direction nearly opposite to the after-end. The forward boiler, becoming also detached from the fore-end of the vessel, was found lying at the bottom of the river, between the two portions of the hull.

"The time which elapsed between the collision and the sinking of the vessel was so short, that although prompt efforts were made to get her boats into the water, the rapidity with which she sank rendered these unavailing."

As regards the allegation of unseaworthiness, the Report informs us as follows:—

"During the progress of this Inquiry charges were made by counsel, who appeared on behalf of several parties, against the London Steamboat Company and the Board of Trade surveyors that the *Princess Alice* was of faulty construction, unseaworthy, and not fit for the service on which she was engaged; and that a certificate had been negligently granted to the vessel when not coming up to the standard required by law; and it was asserted by one of the counsel 'that by such negligence the persons drowned in the casualty had been done to death.'

"The Court, considering the serious nature of these charges, ordered the Board of Trade to summon any witnesses desired by Captain Bedford Pim to support his charges; and two witnesses, Mr. Samuel Pether and Mr. Edward Barnard, were accordingly called and gave evidence in support of this view, although they were in direct variance as to the effect of the blow given by the collision.

"This evidence was, on the part of the London Steamboat Company, rebutted in the most direct and positive manner by Mr. Scott Russell and Mr. Charles John Mare.

"The Court, however, determined that a charge of such a serious nature should be thoroughly sifted, and accordingly, by its Assessors, made a personal examination and survey of the wreck on the 30th October, 1878.

"The following is the report of the Assessors of the Court :—

"We consider the strength of the vessel to fully bear out the evidence of Mr. Scott Russell and Mr. Mare. We saw the five bulkheads, and, cutting out a piece of the deck, we also saw a mid-ship iron stringer. The iron of the plates at the several fractures we examined showed no tendency to being brittle ; on the contrary, it appeared tough and of good quality. We were unable to find any portion of the main deck of the after body of the dimensions of the piece of deck produced in Court by Mr. Pether, and the piece we now produce, stated to us by Mr. Mare to be cut from a deck plank of the fore-body of the *Princess Alice*, does not correspond with it either in thickness or in width, and it differs in this material point, it has been saturated with water. The piece produced by Mr. Pether is, in our opinion, cut from a dry plank. The plates of the fore-body of the wreck were also in good condition.'

"The Court is fully satisfied that the charges as to the faulty construction and unfitness for service of the *Princess Alice* are utterly unfounded, and that the charges against the officials of the Board of Trade are likewise utterly unfounded.

"The Court cannot but deplore that charges of so grave a character against a public company and the officials of a public department should have been made upon such vague and unreliable testimony."

And the Coroner's jury are equally clear in their statement that the vessel was fit for the service.

Considering that a witness in evidence stated that the piece of plank he produced was extracted from the main-deck of the *Princess Alice*, six strakes in, over the engine-room, and near the place of fracture ; considering that the deck of the *Princess Alice* was saturated with Thames water, and that the Assessors who visited the remains of the wreck could not find any portion of the main-deck to correspond with the piece of wood produced by the witness ; and considering, further, that the piece produced by that witness was, in the opinion of the Court, cut from a dry plank, the Court are, we think, not wrong in deploring, as they have done, the nature of the "utterly unfounded" charges.

The second side issue concerned the Rule of the Road. The contention first raised was that there were no rules for the Thames, but of course there are rules, the fact being that the Thames Conservancy Board have adopted, for the navigation of the Thames, rules framed for navigating the ocean. This fact appears to have been unknown to the majority of persons navigating on the river. We are not, however, certain that on the whole an all-round *complete* ignorance of rules so wholly inapplicable as are these rules to narrow channels has not been of advantage in the long run. The mischief was that the *Bywell Castle* acted on this rule and the *Princess Alice* did not. What the Wreck Commissioner's Court has reported on the subject is as follows:—

"During the progress of this Inquiry all the members of the Court have on two occasions visited the *locus in quo*, and on one occasion on board the sister vessel to the *Princess Alice*. On both of these occasions it was evident that the traffic on the River Thames is conducted without regard to the Regulations of the Thames Conservancy, and that a custom prevails with vessels meeting in the river to pass indiscriminately on either side. The pilot of the *Bywell Castle* himself stated that he considered that when his vessel was in mid-stream another vessel, 'right quite ahead, could go either side she liked.'

"The pilot of the screw steamer *Spartan*, which vessel, not long before the collision, had met the *Princess Alice* in Barking Reach, and been passed by her on the starboard side, stated that until this collision took place he had never seen the Conservancy Rules. Several of the other witnesses examined spoke to the same effect, and one of them, John Budd, a seaman of 42 years' service, serving on board the coasting vessel *Pearl*, said:—

"'We must have some kind of rule or else we should run one another down every day; it is very near so now.'

"This view of the case is corroborated by Captain Deane, one of the deputy harbour masters for the Port of London, who stated:—

"'That it entirely depended on the class of vessel as to her course up the Reach. That there is a decided difference in the

courses taken by vessels at different states of the tides, and that there was no written or defined rule of the road.'

"It appears to the Court that the error committed by the unfortunate captain of the *Princess Alice*, who was drowned by the casualty, and paid the penalty with his life, was entirely due to this irregular practice; he repeated an error which he had just before committed, probably was in the habit of frequently committing, and no doubt, like numbers of others daily navigating the Thames, was ignorant of any rules to the contrary, and therefore was not conscious of committing any error whatever.

"This view of the case is supported by Captain S. Mason, who is still in command of one of the vessels of the London Steamboat Company, and at one time commanded the *Princess Alice* herself.

"All the Rules of the Road of the Board of Trade are identical with those of the Thames Conservancy.

"On the Board of Trade, however, is imposed the duty of publishing and distributing gratis copies of their rules to all those concerned.

"No such duty appears to have been recognised by the Thames Conservancy. They do not appear, since their rules were published in 1872, to have done much in the way of making their contents known to those who navigate the Thames; and the Court is of opinion that it would be advantageous if the rules for navigating this river were published on notice boards on the several piers; and that the custodians of the river should commence to enforce the penalty contained in the following rule of their by-laws:—

"72. 'Any person committing a breach of or in any way infringing any of these by-laws shall be liable to a penalty of and shall forfeit a sum not exceeding £5, which said penalty shall be recovered, enforced, and applied according to the provisions of the 'Thames Conservancy Acts, 1857 and 1864.'

This rule up to the present time appears to have been either overlooked or disregarded.

As regards the Thames watermen who had certain privileges granted to them in the dark ages in exchange for compulsory service in the Fleet, and who retain the privileges, or many of

them, without any of the obligations as to service as fighting men, the Court makes the following observations :—

“The Court has in its judgment already severely censured George Thomas Long, the first mate of the *Princess Alice*, for irregularities connected with the look-out kept on board that vessel, and it has reason to fear that the reprehensible system which prevailed on board this ship of allowing the crew to make their own arrangements, and station themselves at the wheel or look-out is not confined to this vessel alone. It has been remarked that all the crew of this vessel, including the captain, were London river watermen, and so also were some of the refreshment contractor’s servants.

“The Court was given to understand that by the Waterman’s Act none other than licensed watermen could be employed on these river steamers.

“Should such really be the case it would account for the want of nautical information displayed by these men, from the first mate downward, several of whom did not know the compass. One of these men denied that he was a sailor. Had he made the same claim for exemption on behalf of others of the crew the Court would readily have admitted it.

“It cannot but be regretted that any Act of Parliament should debar the owners of these large river steamers, carrying 1,000 persons, from employing the most experienced officers and seamen that they can find. Were they allowed to select their servants from the open market, they would have the choice of the best officers and seamen in the Mercantile Navy.”

In this matter of providing for safe navigation of the port, it is very unsatisfactory to find that the highway leading to the chief port of the British Empire is so far behind the Mersey, the Clyde and the Tyne, in the matter of local rules, lighting, dredging, and other things that conduce to safety. Liverpool has on her own account applied for and obtained an Act of Parliament requiring vessels navigating the approaches to the Mersey to keep the starboard hand. The Tyne and the Clyde are made comparatively safe by dredging, and the Clyde by lights, and buoys, and beacons; and we could not have believed without the authority

of the official report, from which we have been quoting, that pilots, masters, and crews of ships frequenting the port, and one of the harbour-masters of the port, should have been to the date of the inquiry, of opinion that in the Thames "there is no written or defined Rule of the Road."

As regards the navigation of the Thames, the Court recommend:—

"The Court has been asked to express its opinion as to whether any alteration in the present rules for the navigation of the Thames or additional precautions are desirable.

"It is the unanimous opinion of the Court that all vessels navigating the river above Gravesend should keep on a defined course, those going up on the one side and those going down on the other side of mid-channel; (say)—

"Each vessel should keep on that side of the mid-channel the shore of which is on her own starboard hand, and that thus vessels meeting should always pass port side to port side, and overtaking vessels should pass on the port or mid-channel side of the vessel being overtaken. The Court is also of opinion that this rule should apply to all vessels and craft of whatever description, notwithstanding that, to enable barges and sailing vessels to comply with it, it would necessitate their being taken in tow by a steam-tug.

"It should be incumbent on vessels requiring to cross from one side of the river to the other, or to turn round, and in doing so getting out of their own water, to see that there is a clear road for them, and to keep out of the way of any vessels moving in the fair-way, and as nearly all the vessels which require to make devious courses on the river are of a comparatively small size and most handy to manœuvre, the difficulties of threading the way through crowded shipping would be thrown on those vessels most able to overcome them."

"It would be necessary to make one exception to the above, viz., as applied to vessels docking and undocking. These vessels are for the moment comparatively helpless, and at such times all other vessels should make way for them.


"The chief difficulty, however, even now, with ships entering and leaving dock is to avoid the crowd of barges and small craft


clustering round the dock entrance or drifting past it up and down the river in all directions.

"These removed or placed under control, vessels docking or undocking would not greatly interfere with the free passage of vessels on the river."

In the preface to a very well-known book on the "Rule of the Road," the following passage occurs :—

"As another instance, it is a matter of fair question whether the time is far distant when large ships, those monsters from 2,500 tons upwards, whose length is sometimes close upon 500 feet must be specially recognised; and other and smaller craft must be made to get out of their way. To expect a ship like the *Great Eastern* or the *Egypt*, or the *Faraday*, or the last new ships of the Inman, Cunard, White Star, and Peninsular and Oriental lines, to get out of the way of a little steam launch, or a smack of a few tons, may in a year or two be regarded very much like expecting an ox to get out of the way of a frog, or an elephant to dodge a mosquito. The time may not be long in coming, when small craft, especially in estuaries and rivers, and near the coasts in waters much frequented, will have to keep out of the way of large ships; then a whistle signal will have to be devised whereby a large ship can warn small craft to keep away.

"This creature  (which I may explain is a steam-'ship') is required to keep out of the way of all sailing ships, large as well as small; but if she has the *Great Eastern* on her own port-side, and is a crossing ship, then, if you please, the *Great Eastern* is to get out of her way.

is a seagoing 'ship,'  This ship (which I may mention that is to say, a lugger not propelled by oars) holds her way against all steamers, large and small, and against other sailing ships, where under the Rules she is the holding-on ship: and a steamship has also to keep clear of a nest of barges floating up or down with the tide, without order or regularity, all over the fairway, like this—



"It has been a matter of surprise that the owners, masters, and pilots of large ships, have so long endured the absence of order

and the existence of Rules which require the 'Leviathan' to get out of the way of a sloop in ballast, or of a load of straw, or coals, or anything of that sort floating about at random in a barge, or in a wherry, or flat ; instead of requiring the smaller vessels to keep out of the way. It is more reasonable that small craft of light draft of water should leave the channel course unobstructed, as they can manœuvre all over reaches, if they like ; can turn almost in their own short length ; and do not need the deep water channel at all which the large ship must have.

" When a tug has a large ship in tow she again has to keep out of the way of all these craft however small, and to do this is often very onerous and difficult and sometimes impossible. We need not look for improvements in these respects by alterations in the International Steering and Sailing Rules, but rather to the awakening of authorities who have power to issue Rules for safe navigation within their jurisdiction (for they are more local matters than affecting the high seas) ; and to the decisions of Courts, assisted by Assessors, who themselves know the practical difficulty of handling large modern ships. A feeling will gradually be created, as the masters of these ships are promoted to be Assessors, which will spread itself and help to lead to reform and relief in the direction indicated."

The above passage is fully corroborated by the following observations in the Report now before us. The Court go on to observe :—

" The traffic of the River Thames has now become so crowded, and the dimensions of vessels passing up and down now exceed so enormously those of the ships of the last generation, that the safe navigation of the river by large steamships from 250 to 500 feet in length is incompatible with the presence of small craft drifting up and down with the tide, and (not being under control) unable to follow any rules whatever.

" Many of the owners of barges and small sailing vessels now find it to their interest to employ steam above Gravesend, and the Court is of opinion that the time has arrived when it should be made compulsory on them to do so, and that no serious hardship would be entailed on them by such compulsory enactment, which

would conduce to the safety of the river navigation more than any other change contemplated.

“ The Court is informed that the Mersey, the Clyde, and the Tyne are already in advance of the Thames, as on those rivers the bulk of the river traffic is now conducted under steam.”

The other suggestions which are to be found in the body of this admirable Report are as follows :—

“ The Court cannot leave this subject without expressing its opinion that much of the waterway of the Thames is obstructed by hulks and vessels riding at buoys, placed at unnecessarily long distances from the shore.

“ Powder vessels, especially the one off Tripcock Point, numerous coal and other hulks, such as the *Atlas*, vessels laying up, such as the *Castalia*, unnecessary moorings, such as those off Deptford, are all serious obstructions to the navigation of the river, and the Court is of opinion that these and all similar obstructions should be removed altogether, or placed much farther back from mid-channel, so as not to interfere with the waterway. It is also of opinion that so long as the colours red and green are used for the distinguishing side lights of shipping, no lights of these colours should be allowed to be placed on the banks of the River Thames.

“ There are also several obstructions existing below water, the removal of which would add greatly to the safer navigation of the river, but the Court suggests that the obstructions above water might be removed without waiting for the clearing away of those below, which may be a work of time and expense.

“ The Court has been asked to express an opinion whether any alteration is desirable in the conditions under which passenger certificates are granted by the Board of Trade, and it is of opinion that the conditions as to the number of passengers permitted to be carried have borne the test of many years experience, and that the scale of space per head as at present adopted does not exceed the limits of safety.

“ Neither has it reason to consider that the limits within which the river steamers are licensed to ply are too wide.

“ But it does unanimously express its opinion that a restriction

might well be placed on the running of these vessels with passengers after dark, or at all events beyond one hour after sunset.

"This would confine the time in which an accident could occur to daylight, and had the collision in question occurred in daylight, doubtless the consequence would have been far less disastrous.

"It is in evidence that the look-out man and the men at the wheel of the *Princess Alice* were surrounded by passengers.

"If these men could be placed at an elevation above, and railed off from the passengers, they would be enabled to do their duty in a more efficient manner. And if the steering wheel in these passenger steamers could be placed forward of the funnel or funnels it would be highly desirable.

"The Court now report that, having carefully inquired into the circumstances of the above-mentioned casualty, it has returned the certificates of George Thomas Long, Captain Thomas Harrison, Henry Dimelow, and Robert Thom; and that it finds the cause of the said casualty was the breach of Rule 29 of the Thames Conservancy Regulations by the *Princess Alice* not porting her helm when she came end on to the *Bywell Castle*, a vessel coming in the opposite direction.

"The Court is also of opinion that all parties shall pay their own costs."

We now leave the Report, and in doing so we cannot but express our opinion of the deep obligation under which the travelling and the trading community of London are under to the Magistrate and Assessors.

All the while the Wreck Inquiry Court has been sitting, as well as long before it began and after it completed its investigation, the Coroner and his jury have been amusing themselves by what they are pleased to think is the holding of an important inquiry at Woolwich. The jury have been successful in finding a verdict that displays eccentricity, and in demonstrating to the world, though such a demonstration is not necessary, that "Crownor's 'quests" had better in the majority of cases be abolished. Our well-informed contemporary, the *Standard*, has some very sensible remarks, which we think are appropriate as well as sensible, and being so, are fit to be placed before our critical readers.

Our contemporary says :—

"The result—(of the verdict of the Coroner's jury)—is a compromise, arrived at after an exhibition somewhat discreditable to the palladium of British freedom. When the jury retired late on Wednesday evening to consider their verdict, the foreman fortified himself with a dish of sandwiches, which he is reported to have put in his pocket with the remark that 'they were for his supper:' some other jurors in difference with him retorted that they were as well prepared for a trial of endurance as he, and had furnished themselves with 'pocket pistols' into the bargain. Water bottles, it seems, were ordered, and also a liberal supply of fuel. It was five o'clock in the afternoon when the retirement took place, and the verdict was not given until half-past seven the next morning.

"It is absurd to pretend that such a finding is unanimous, or even entitled to respect. The jury were evidently divided into two hostile camps, and effected a compromise by returning a verdict absurd in itself, and worse than absurd when considered by the clear light which the Report of the Commissioners sets upon the circumstances of the calamity. With all respect for a time-honoured institution, it is difficult to avoid the unpleasant conviction that some very trenchant reforms are needed in the conduct of Coroner's inquests, and the general practice of 'Crown's 'quest law.' We need not, perhaps, in the present case, insist on the idle and almost vexatious length of the proceedings, and on the absurd manner in which they were delayed by frivolous questions and collateral disputes, in which, sometimes the jury, sometimes the legal gentlemen engaged, and sometimes even the Court itself was responsible. If once we admit that it was the duty of the jury to inquire into the calamity from every possible point of view, it will follow, as a matter of course, that their deliberation has not been of undue length. But, on the other hand, in these stirring days of law reform, when legal procedure is being simplified, and all troublesome multiplicity of proceedings and jurisdiction avoided, we cannot but ask ourselves in amazement why the jury convened by Mr. Carttar should not have confined its attention to a very simple issue. All that they

need have done was to return a formal finding, to the effect that the deceased came to their death in consequence of the collision of the *Byrell Castle* with the *Princess Alice*, on a given day, and at a given place. When a competent court of nautical experts is conducting a concurrent investigation, it is a waste both of public time and of public money for some twenty jurors, who presumably are altogether ignorant of navigation and nautical matters, to take upon themselves the determination of questions upon which their opinion is worthless, and which there is really no necessity for them to deal with. Originally, if our Constitutional historians are to be credited, a Coroner's jury did useful work. Every Coroner in his district was a conservator of the King's peace, and when a body was found within his jurisdiction, he summoned a jury to decide whether the case was one of murder or not. Upon the finding of the jury he assumed what were virtually the functions of a public prosecutor, and arrested, or issued his warrant for the arrest of, the proved or suspected murderer. He had also many other functions which have long fallen into desuetude. He inquired into fires, where arson—then a capital offence—was suspected; into shipwrecks, and into cases of treasure trove. His duties, in short, were very much those of a public prosecutor, or procureur-général, for his district. . . .

"All kinds of suggestions have been thrown out during the course of the inquiry by amateurs of various degrees of intelligence. One gentleman, for instance, wished to see an Act of Parliament ordering every passenger by a river steamer to carry with him an India rubber lifebuoy. Recommendations of this kind may be taken for what they are worth, and we hardly need the complex machinery of a Coroner's inquest to have them brought before us. We must not, however, blame a jury which, not being directed and controlled by a strong judge, strays beyond its proper limits. If one thing is more clear than another, it is that it will before long be necessary either to supersede Coroners' inquests altogether, or else to control them within reasonable bounds, and to ensure that their finding shall be of some practical value."

Another thing was inevitable after this deplorable casualty, and that was that the Rule of the Road doctors should thrust forward

their schemes. Such a calamity as this was too favourable an opportunity to be missed. Our old friend, Mr. Stirling Lacon, who we trust may for many years yet be spared to enliven this dull subject by his bursts alternately of indignation and jest, has again put forward those concise rules of his which have been to him the comfort of many years and the solace of many voyages, and the cause of wonder to others. We reproduce them in order that our readers may fully appreciate them as things to be avoided.

"A steamer having another end on shall port," "a steamer having another on her port side shall port," and "a steamer having another on her starboard side shall starboard and stop;" that is to say, where A and B would pass clear without collision if

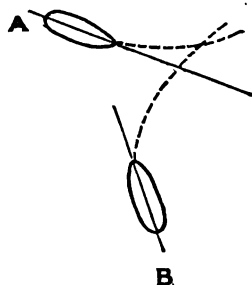


FIG. 2.

MR. LACON'S RULES.

left alone (and they are left alone by the present rules), they shall by Mr. Lacon's rules both be compelled to alter their courses. Mr. Lacon wishes it to be made compulsory that A *shall* starboard and stop, and that B *shall* port and go on. Admiral Sir J. C. D. Hay, and a few other gentlemen, are in favour of such a modification of the law. Our readers are not.

Another distinguished officer has also favoured the public with his views on the Rule of the Road, but we admit candidly that he is as far beyond us, as he is beyond every one else we have spoken to on the subject. We refer to Captain P. H. Colomb, R.N., who, writing to the *Times* on the subject, concludes his letter as follows:—

"She (the *Princess Alice*) sees, as she is rounding her point, a very bright green light on her port bow (to the left). If this light

is far enough off to allow her to cross it in safety, then she is bound to do so; but if she estimates any danger in crossing it—where is she? There are conditions, and very common ones, under which the only thing which can possibly save her is to put her helm hard-a-starboard, which the *Princess Alice* did. After this it may be that the only thing which can possibly make a collision is for the ship which has shown the green light to turn to the right with her helm hard-a-port, which the *Bywell Castle* did.

"This leads me to my final remark, which I would I had power to write in letters of fire. In all the usual conflict of evidence based on bearings of the compass, times, and distances, only one thing is absolutely certain in this case—the *Bywell Castle* had a distinct signal to put her helm hard-a-starboard, and she put it hard-a-port!

"This is no vague assumption on my part. It is an experimental fact, which can be verified by further experiment. The *Bywell Castle*, though acting on her legal rights, did that which was *eight times as dangerous* as the reverse movement.—Yours obediently, P. H. COLOMB, Captain R.N."

The gallant Captain so far misconceives the rule as to run himself into very great dangers. In the first place, we are not aware of any rule by which any steamer "is bound to" cross the path of another. Yet we are assured this is the case. The rule is that one vessel shall keep her course, but that is not, as the gallant Captain assures us it is, that she may cross the path of another ship, but is, as everyone but the gallant Captain understands, solely so that the other ship may know how to keep out of the way.

The gallant Captain points out that the only way in which the *Bywell Castle* could get into collision was by porting, which she did; but he overlooks the fact that the *Bywell Castle* ported so that she might go astern of the *Princess Alice*, and that she would have gone astern of her if the *Princess Alice* had kept her course.

Another point is very curious, and that is that the gallant Captain regards the presence of a red light on the starboard-side as a "distinct signal" that the steamer seeing it is to put her

helm hard-a-starbord; this is extremely enigmatical. But the concluding sentence of the letter, that it is eight times as dangerous, in a case like this, for a vessel to port, *i.e.*, to attempt to pass astern of the vessel she is to avoid, than it is to starboard, *i.e.*, to pass in front of her,—is more wonderful still.

In spite of all suggestions for alteration, we are satisfied that the Rule of the Road for the Sea will remain as it is, and the consensus of opinion among practical men is averse to change; but while we hold to this view we are still, as we have always been, in favour of a distinct rule for the navigation of rivers and other narrow waters.

In concluding our remarks, we have just two points to mention. One is that every one of our readers who has any suggestion to make on the subject of the Rule of the Road, the saving of life, the lights to be carried by steamships and sailing ships, or any suggestion whatever as to safety afloat, had better at an early day apply to Mr. A. W. Heron Maxwell, the Clerk of the Thames Traffic Committee, 6, Craig's Court, Charing Cross. He who has any remedy to suggest, or any view to enforce, has now before him an opportunity, the like of which has not been presented within the present generation; and we feel that it will be a matter of public regret if any person who has anything useful to put forward, does not avail himself of the present opportunity.

The second point is, that we have received letters from some of our correspondents, who still speak of "the Wreck Commissioner's Court" as "the Board of Trade Court." We have already more than once explained that under the recent Statutes and the new rules, the Wreck Commissioner's Court has no more right to be called the Board of Trade Court than has the Court of Queen's Bench. The Wreck Commissioner's Court is free from Board of Trade control, and is free to criticise and condemn the action of the Board of Trade and its officers, and has done so, just as fully as, writing in the interests of the nautical public, we are free to criticise the Wreck Commissioner's Court, and have done so, as our readers will recollect, in the case of what we thought and still think the wrong decision of that Court as regards the *Avalanche* and *Forest*.

THE CARRIAGE OF EXPLOSIVES FROM THE PORT OF LONDON.

THERE is too much reason to suppose that the regulations now in force as regards the carriage of explosives from the Port of London, partly from their insufficiency and partly from their conflicting nature, do not give the protection at which they aim ; we therefore propose to give a short account of these regulations and of the manner in which they are enforced in the Port of London, and further to endeavour to suggest a method of stowage and a plan of inspection which it is believed would give increased safety to the various interests concerned, and would not unnecessarily harass the shipowner.

The manufacture of explosive substances and the conveyance of them throughout the kingdom are subject to the supervision of the inspectors appointed by the Home Secretary, and to the bye-laws of various local bodies sanctioned by the Board of Trade under the Explosive Substances Act, 1875. The safe stowage of them for *sea voyages* is generally held to be under the supervision of the Board of Trade, as by Section 6 of the Merchant Shipping Act, that department has power to detain provisionally for survey British ships which, by reason of improper loading, are unfit to proceed to sea without serious danger to human life. But we believe they make no secret of the fact that their practice is not directly to interfere except in the case of emigrant ships, and when complaint is made by a passenger or seaman in conformity to the Act, or sometimes when specially applied to by the shipowner to do so. The Thames Conservancy Board have rules which are binding within their limits, but we are unable to discover that the officers of this body, like inspectors "under the Act," can go beyond the printed regulations of their own department, and enforce compliance with what in their opinion is necessary for safety in any particular case. Besides these legal authorities duly constituted and supported by Act of Parliament, there are the Admiralty, the Indian

Government, and the London shipping agencies of British colonies and foreign Governments. The rules of these shipping agencies have no legal force and are binding only on the shipowner when he carries their goods. The first of these, viz., the Admiralty, publish instructions in regard to and exercise a supervision over the explosives they ship, and the shipping department of the Indian Government, together with some of the London shipping agencies, engage freight for their explosives upon condition that magazines of a certain description are built. We will now proceed to give a curtailed description of these regulations gathered from published documents and the experience of shipowners.

The shipping department of the Board of Trade, in cases where they directly interfere, stipulate for a substantial compartment formed of double boards with an intermediate lining of felt, or that the explosives are *otherwise* and by careful stowage secured from contact with or danger from any other article or substance carried as cargo on board the ship. Or they may be surrounded with goods carefully packed, and have boards between them and the goods, so as to completely isolate them from all cargo likely to cause explosion by metal coming in contact with powder. Or they may be surrounded with sail-cloth or felt in such a way as to effectually prevent any of the powder getting adrift during the voyage and filtering into the general cargo. At the same time, the explosives must be so placed and surrounded, that the crew cannot get amongst them in their attempts to plunder cargo; nor must they be placed in the same part of the ship as combustibles, spirits, or other inflammable goods. Further, gunpowder, except as to certain conditions of quantity, is not allowed to be shipped with coals or petroleum. It will be seen from the foregoing that the precautions required are of a somewhat makeshift character, and that by them nothing which can be fairly called a magazine is actually insisted upon. Doubtless their surveyors have power on inspection to enforce what they think requisite for safety, but it must not be forgotten, as before stated, that it is only in certain exceptional cases they by direct interference control the stowage. The Conservators of the river Thames publish a book containing a number of apparently carefully-drawn and well-considered rules, but they state

on the first page thereof that they "apply to the river Thames and such part of its tributaries within the jurisdiction of the Conservators as lie between Cricklade in the county of Wilts, and Yantlet Creek in the County of Kent." Rule 38 is as follows:—"In any ship carrying any quantity of explosives (beyond 500 lbs. for the ship's own use), and in any boat carrying explosives, due precautions shall be taken by means of a bulkhead or partition or *otherwise*, and by careful stowing to secure the explosives carried from being brought into contact with or endangered by any other article or substance conveyed in such ship or boat which is liable to cause fire or explosion." By this it would appear explosives and cargo are to be kept separate, but no magazine is insisted upon. It is however but fair to state that we believe in regard to river craft, traffic, place for and mode of shipment, the bye-laws of the Conservancy are efficiently drawn and that the precautions taken on board outward-bound vessels carrying explosives (with which we are now dealing) are a sufficient guard against the chance of an explosion between Gravesend, where they are generally shipped, and Yantlet Creek (a distance of about 15 miles), the eastern limit of the Conservancy's jurisdiction. The Admiralty have always insisted upon a magazine for gunpowder and ammunition, not only for their own stores but for all others of a like description carried in the same ship, save in the case of certain small quantities. As may be seen by reference to their published regulations the magazines must be built of three thicknesses of wood, and to judge by the specification they seem to be of an expensive and superior description. Many of their rules in regard to position of magazines in the ship, contiguity of other explosives and combustibles, etc., might possibly be revised with advantage, but be that as it may, this department of the Government have always been distinguished for the care exercised in the carriage of their explosives. We are unable to quote from published rules of the shipping department of the Council of India, but believe the magazines on which they insist are now built in accordance with the specification of the Admiralty. Their requirements in other respects are by some considered *too* exacting.

The London shipping agencies of the colonies have not all fixed

rules ; some stipulate for those of the Admiralty being carried out, and others are content with what will satisfy the Thames Conservancy officers, and will pass the possible survey of the Board of Trade. We cannot better show the conflicting nature of these regulations than by supposing a case in which they all four come into operation. Such a case, if not within the actual experience of any London loading broker, is quite possible and may any day occur. A large steamer is loading a general cargo in one of the London docks for several ports in the Indian ocean. Amongst the first engagements for freight made by her loading brokers is a quantity of Indian Government stores, included in which are, say, 40 tons of safety cartridges. As she proceeds with her loading the brokers procure from the Admiralty 20 tons of gunpowder and 2 tons of guncotton. The next thing offered is, say, a further quantity of 20 tons of cartridges (not safety) the property of a British colony or foreign Government which is also taken.

Towards the end of her loading the broker is offered by an exporter five tons of fireworks, and having still room to spare, and the rate being tempting, he accepts them. The vessel will also have on board as freight a quantity of spirits, matches, turpentine, tar, oils, acids, and other highly inflammable and dangerous goods, such things very commonly forming part of the general cargoes of outward-bound ships. Now unless the intending passengers or crew of this vessel are aware of the nature of the cargo to be carried before she leaves dock (which is not very probable), and lodge a complaint with the Board of Trade, the chances are that that department of the Government will not directly interfere. But the owner of the vessel may or may not invite the Board of Trade to direct the stowage ; if he does, no doubt, notwithstanding the somewhat vague and meagre details as to magazines, etc., which are supposed to be their requirements, and a sketch of which we have given, they would in a case of this sort instruct their surveyors to insist on every possible precaution being taken to insure safety, and perhaps go the length of advising the owner to leave some of the explosives behind. But should the owner, dreading as he thinks the expense and possible loss such a course might entail on him, prefer not to appeal to the Board of Trade, but to risk their

interference, he would probably proceed somewhat after the following manner :—He would, as he engaged to do, allow the surveyors for the shippers to select the place in the vessel for and to build their magazines in accordance with their rules. As the work proceeded, however, the fact would become generally known that there were many shipments of explosives belonging to different shippers, and each surveyor would probably feel in duty bound to see that his particular instructions were observed. One would require separate magazines provided and built on his specification for *all* the different shipments of gunpowder and ammunition the vessel was to carry, and that the gunpowder and ammunition should be placed in different parts of the vessel ; but he would *not* require a magazine for the guncotton. The other would probably ask for magazines the same as above, and, *in addition*, one for the guncotton ; although he might be indifferent as to their being placed in separate parts of the vessel, though they must be in separate magazines. In anticipation of the inspection of the Thames Conservancy surveyors in the river and knowing that they would be the only legal authorities likely to interfere, the owner would probably refer to their printed bye-laws and there find that provided he took certain precautions as to stowage, “ To secure the explosives carried from being brought into contact with or endangered by any other article or substance conveyed in such ship liable to cause fire or explosion,” no such magazines as those which were being insisted on would be required by the Conservancy. It will be seen from this the difficulty and uncertainty in which the owner would be placed, and, should he feel inclined to blame his loading broker for not having procured more precise information before engaging such cargo, he could hardly on consideration decline to excuse him for having erred in so complicated a matter. We will suppose, however, that after much trouble the loading broker succeeds in getting the surveyors for the shippers to arrange their differences, and that, their requirements to which he is made to conform being so much above those contained in the printed bye-laws of the Thames Conservancy, they will be passed by them in the river. The owner now finds he has been saddled with an expense which he did not contemplate and which he is not

compelled by law to incur, in building magazines of costly character for the cartridges belonging to the British colony or foreign government, and also for the fireworks shipped by the exporter, though he discovers too late his broker has pledged him to the rules of other shippers which required him to do so. He has most likely experienced great difficulty in finding separate parts of the vessel satisfactory to the surveyors for the stowage of these explosives; and considering the matches, spirits, and other inflammable articles which the vessel has on board and from which they must be kept apart, it is a marvel if he succeeds. But we will give another case not quite so complicated, where the shippers being what are called private shippers, that is, export merchants, no conditions of stowage are imposed by them and the owner has simply to deal with the local legal authorities. A large Australian clipper on the berth for a general cargo, has engaged for her ten tons of guncotton, twenty tons of gunpowder, with fifty tons of matches, and a large quantity of spirits. Those in charge of the loading, guided more by motives of convenience than of safety, decide to put the powder in the after-hatch and the guncotton in the main-hatch. While the loading proceeds in the dock they are (save in the event of complaint being made to the Board of Trade) rarely, if ever, interfered with, but the owner knowing he must pass the Thames Conservancy inspection in the river and wishing to be on the safe side, consults those authorities as to what they require. He will most likely be told that for the gunpowder a magazine must be built, but for the guncotton stanchions or pillars round it will suffice. (Query? Are these latter to keep it from getting adrift in case the vessel encounters heavy weather with high seas between Hole Haven where the guncotton is shipped and Yantlet Creek where it passes the Conservancy Board's limit?) The owner has had some trouble and uncertainty in this instance, resulting in precautions taken with a view to safety, but it is by no means certain they might not have been more effectual and complete had responsible authorities watched the stowage in the docks, for if it should turn out that the stevedore, oblivious of the fact that spirits and matches are safer apart from explosives in a ship's hold, has filled the after part of the vessel where the powder

is with spirits, and the main 'tweendecks where the guncotton is with matches, very likely the circumstance will escape the notice of the Conservancy officers who visit the ship in the river at a time when such stowage would be hidden from their sight. Should either of these vessels have the misfortune to take fire at sea, what chance there might be of extinguishing it or of keeping it under for a time would be greatly lessened by the manner in which the explosives and inflammable goods were stowed.

We will now endeavour to suggest a method of stowage which, probably, would give fair protection. We say fair protection, because while vessels carry large and mixed cargoes, a considerable portion of which is often made up of spirits and other inflammable and explosive articles, a certain amount of extra risk must necessarily be incurred. To prohibit such cargoes altogether would be to hamper trade, but in some instances common safety requires that the quantity and number of different kinds of explosives which a vessel may be allowed to carry should be limited. When fire occurs at sea the risk of an explosion increases as the quantity of explosives carried exceeds that which the crew can throw overboard in a short time. Substances liable to spontaneous ignition most certainly ought not to be carried with them, and inflammable goods should be placed as far apart from them as possible. A lightning conductor should be fitted to each mast, and we would suggest that for every explosive properly so called a magazine be built, which should be placed in the square of a hatchway and extended round it as required. The hatch ought not to be a booby hatch or have a companion, but one that is properly caulked and battened down, and when once secured at the beginning of the voyage must not be lifted except in case of urgent necessity. The description of the magazine need not be so expensive as some but superior to others now built, say, according to the following specification:—

Stanchions.— $3'' \times 2\frac{1}{2}''$ to be placed 2' 6" from centre to centre, cleated at their upper and lower ends to the ship's deck, beam, or the floor bearers, as the case may be, or otherwise made quite secure.

Floor Bearers.— $3'' \times 2\frac{1}{2}''$ to be placed 1' 6" from centre to centre,

and if not fairly supported throughout by the cargo to be properly made up with chocks every 2' 6" of their entire length.

Sides.—To be boarded outside with inch board and lined inside with inch and quarter feather-edge.

Floor to be laid with inch board lined across with inch and quarter feather-edge.

Ship's deck.—When forming the top or bottom of the magazine to be lined with inch and quarter feather-edge.

Ship's sides, when magazine extends thereto, to be lined with inch and quarter feather-edge.

Hatchways.—The top of the magazine in the wake of the hatchway to be filled in with two inch boards lodged on a batten secured to the side coamings, so as they can be easily removed in case of fire for the discharge of the magazine.

Ironwork to be lined over or cased in.

Copper nails to be used throughout.

Workmanship and material to be of good quality.

Scantlings to be increased for large magazines.

Inch and quarter feather-edge to mean boards cut from inch and a quarter plank, being one inch on the thick edge and a quarter of an inch on the thin edge. For quantities under a ton substantial cases should be provided, tops to be fastened with copper or brass screws and fitted with cleats and becketts at ends. Each case when full not to exceed $2\frac{1}{2}$ cwt. in weight so that it may be easily handled.

In recommending a magazine for all explosives we are well aware they are not all equally dangerous. Safety cartridges and gunpowder in canisters are much more secure than in barrels. But it must be borne in mind that in the event of fire on board and there being time to attempt to clear the ship of explosives, it is of the first importance they should be separate from other cargo so that every package can be got at with certainty. In the absence of a magazine a stray package might be overlooked in the hurry of the moment by becoming mixed with the other goods, and so might remain a hidden danger. It is of course impossible to make a wooden magazine fireproof, but such a one as we have described

would be so to a small extent and if placed as suggested, by raising the hatches the whole of the boards forming the top could be lifted or driven up, and several gangs of men could work at its discharge. Light would be available to the best advantage, and the fire-engine hose could be played on the contents so as to drench it and go some way towards flooding it, as the boards would swell with the water and impede its escape. We think such an arrangement would be found to compare favourably in point of safety with some magazines now built away from the hatchway where the light is intercepted, having small entrances to them through which only one package at a time can be passed, the copper padlocks and fastenings fitted to which are unnecessary and simply form additional obstructions. It seems at first sight only prudent to separate substances liable to explosion by percussion, from gunpowder, but to do so is to spread the stowage and increase the number of dangerous compartments in the vessel, and so prevent speedy discharge. Even should circumstances, such as the quantity being too great or the time available too short, render their being thrown overboard impossible, as a choice of evils it would still seem preferable for all explosives to be in one place rather than distributed. It is the risk of explosion during shipment and discharge of these articles against which precautions ought to be taken, and this could be accomplished by orders given to the officers and printed notices pasted on the magazine, to the effect that substances liable to go off by percussion must be shipped first and discharged last. If this were done and a division made in the magazine, the stowage ought to be sufficiently close and firm to prevent concussion, and the advantage would be gained of having the explosives all at hand in one hatchway. As regards supervision it will be evident from what has already been said that though legal power exists to stop unsafe ships, there is at present in the great majority of cases from the Port of London no direct authoritative supervision of the proper stowage of combustibles in sea-going vessels. There are several public bodies who when shipping such goods supervise in their own interests, and there are two legally constituted authorities, one of which acts for local protection only and the other in certain exceptional cases, as for instance when called upon to do so for the

protection of life and property at sea. The general result of this state of things is that shipowners are put to much trouble and uncertainty in trying to conform to the many different rules, while the best and safest stowage is not secured. Considering that the shipping interests have lately been subject to a great deal of legislative interference, we should hesitate before putting forward the suggestion we are about to make were it not that we think it justified by the specially hazardous nature of the trade, and would be for the public benefit, viz., that the shipping department of the Board of Trade take the matter under their direct supervision, and that they should hold shippers and owners responsible for the safe and proper stowage of these dangerous goods. The Home Office in conjunction with the Board of Trade and local bodies consider it necessary to exercise supervision in the case of manufacture and carriage within the United Kingdom, and it seems not less reasonable that British ships with their passengers and crews should have a somewhat similar protection accorded them. Clause 6, of the Merchant Shipping Act, gives the Board of Trade a general power to detain ships which by reason of *improper loading* are unfit to proceed to sea without serious danger to human life, and Clause 58 (b.) of the Explosive Substances Act, reads like a special power given to Board of Trade inspectors in respect of explosives. It runs as follows:—"The Board of Trade may from time to time by order direct any person acting under the Board as an inspector or otherwise, for the purposes of the Merchant Shipping Act, 1854, or the Act amending the same, to inquire into the observance of this Act in any harbour or *in the case of any ship*, and generally to act in such harbour and with respect to ships, as an inspector under the Act."

Were the Board of Trade to appoint one of their superior officers especially to supervise the carriage of explosives in ships, assisted by one or two inspectors to visit the docks, with an office at St. Katherine's Dock House, Tower Hill, it is probable that increased safety to the public and advantages to the trade would follow. At such an office shipowners or their representatives could make inquiries, which would enable them from the first to arrange their stowage as required by the authorities, and so to avoid the

risk of incurring a heavy penalty and having their ship stopped when ready for sea. Amongst other things, the business of this office should be to collect all possible practical information on the subject, to frame rules and give advice, and to act with a view to public safety, combined with the convenience of shippers and shipowners ; but at the same time to hold the parties interested in the shipment responsible for the proper stowage of the goods. With regard to the Thames Conservancy we think they would have quite enough to do in carrying out their bye-laws for local traffic and the shipment of explosives in the river. Outward-bound ships come under these bye-laws only for a distance of about fifteen miles of their course down the Thames, viz., between Gravesend and Yantlet Creek ; and it must be remembered that the river is wide between these points, and the banks thinly populated, so that the Conservancy can reasonably be content with a mode of stowage that suffices against immediate accident, and they can hardly consistently be called upon to take measures against what may happen outside their limits. If a vessel were unfortunately to blow up in the Downs, it is not difficult to imagine what their answer would be if called upon to explain the reason.

In conclusion, we would wish to guard our readers against supposing that in anything we have said it is intended to reflect upon the action or non-action of any Government department or individual. Doubtless their course is dictated by what they deem most consistent with their duty. It is against the system, or rather the want of it, that we complain, and our object will be attained if by drawing attention to it we are in ever so small a degree instrumental in bringing about regulations respecting the carriage of explosives from the Port of London more intelligible to the shipowner, more consistent in practice, and giving to British subjects at sea a greater measure of safety than they have hitherto enjoyed.

CORRESPONDENCE.

SHIPS' LIGHTS, &c.

To the Editor of the "Nautical Magazine."

SIR,—In this month's number of the *Nautical* a Neyland correspondent submits a few suggestions for the prevention of collisions at sea.

I am quite of his opinion that something of the sort would prevent many collisions, and I have no doubt different masters would suggest different plans; but any plan that might be adopted should be simple and effective. I think your Neyland correspondent seems rather doubtful about the night signals he would adopt himself, which of course is the most particular.

I would humbly suggest a prize be offered—something after the style of the Spring Safety-valve Competition—for the *simplest* and *most effective* means of conveying your intentions to another vessel when under weigh. I dare say in England there are persons sufficiently interested in such an important subject to offer a prize.

If the ventilation of the subject in your valuable Journal ends in the adoption of some plan for the safer navigation of our rivers and channels, the thanks of thousands would be due to your Neyland correspondent for having started it.

While on the subject of collisions, I may add it seems wonderful to me there are not more "Pilot boats" run down in the Bristol Channel; they will persist in dodging you, and it is almost next to impossible to tell which way they are heading.

I think it is quite as necessary for them to carry a light to indicate their course as any other vessel, in fact more so, being smaller, and not so readily seen, also having no settled course.

I would suggest the lamp at the masthead to show white a-head; red and green, respectively, at the sides; or perhaps some one may suggest a more effective mode.

Hoping, Sir, I am not needlessly taking up your time, allow me to subscribe myself

Faithfully yours,

ANOTHER STEAMBOAT MASTER.

Bristol, 4th Nov., 1878.

[We should feel much inclined to adopt our correspondent's practical suggestion as to offering a prize for the most simple and effective means for enabling one ship to convey to another what her intentions are when necessary, but as an official Committee, nominated by the Board of Trade, is now sitting, which is, we believe, giving this and other relative matters full consideration, it appears desirable, before taking any definite action ourselves, to learn what will be the outcome of the Committee's investigations and deliberations. We believe that the Committee would be glad to consider the merits of any plan for achieving the desired object which may be submitted to them.—ED. N. M.]

CONCERNING YELLOW JACK.

To the Editor of the "Nautical Magazine."

SIR,—Will you allow me to make a few remarks on the sanitary condition of ships that are exposed to being attacked by yellow fever?

A year ago I drew your attention to the exhalations of deleterious gas from the cable tanks of a telegraph steamer, and contended that their effects on the health of the crew were of a specific poisonous character, but at the same time "predisposing to yellow fever," especially during epidemics of that malady, when "any serious febrile process runs into it." (*Nautical Magazine*, October, 1877.) Since I wrote this I have made two voyages to New York in a well appointed and new steamer of 1,700 tons register, which, however, laboured under the sanitary defect that her bilges had become choked with stray grains of Indian corn, now a frequent cargo for Europe. Though it was winter time, and repeated attempts had been made by flushing and disinfecting to get rid of the rotting grain in the bilges, the exhalation and consequent corruption of air was very perceptible and most distressing as soon as the ports and hatches had to be shut, a thing naturally of frequent occurrence at every season in the North Atlantic. Leaving this ship, I joined another steamer of about 1,000 tons register, which had just come home from Brazil, *via* New York. At this latter port she had likewise taken a cargo of Indian corn, and, though when leaving England again by the end of February no smell was

to be detected, we had scarcely passed Madeira when the peculiar odour of sulphuretted and phosphuretted hydrogen became most distinct and soon large quantities of a dark coloured and most offensively smelling bilgewater had to be pumped out daily. In it came out freely empty shells of the grain, the meal of which had liquefied when rotting. The cleansing of the bilge was greatly impeded by the circumstance that it was covered by an old-fashioned square tunnel, from under which the firemen had to scrape out the soaked and jammed grains of maize. One of these men, who had been engaged at this work for hours, came up very faint and feeble-hearted, and after a dose of peppermint, ginger, and brandy blew off from his mouth large quantities of stinking gas which he had swallowed. By perseverance in pumping, flushing and disinfecting with carbol to arrest the putrescence of the grain, and with chloride of lime in order to destroy the gases that had been formed, the bilge became perfectly sweet before we reached Brazil by the middle of March. Though, on her previous trip to South America two men had died of yellow fever, and several had been ill severely, we were lucky enough not to have a single case during a month's stay in Brazilian and River Plate harbours, nor on the passage from there to New York when carrying a heavy cargo of 22,000 bags of coffee and a large quantity of coal in the hold and on deck. On our arrival at Rio yellow fever was very prevalent, and every ship of the same line which had been staying in the harbour lost several men. Had we not succeeded in getting rid of the putrefying corn in the bilge before that time, I am morally certain that with 93° in the shade on the quarter deck at Rio, fever and death would have occurred.

I need scarcely mention that the exhalations of rotting wood, salt hides, putrefying meat, decomposing fish, also salt fish, and oysters, whose *bodies* are rich in phosphorus, have long been known to predispose to outbreaks of "Yellow Jack." Dr. Rego, Barao de Lavradio, the President of the Imperial Council of Health and sanitary inspector of Rio harbour, tells us in his "*Memoria historica das Epidemias da febre amarella e cholera-morbo no Brasil*" (Rio de Janeiro, 1873), p. 10, that yellow fever appeared the first time at Pernambuco in

1686, "sendo para ahi importado, segundo se acrediton entao, por um navio procedente de S. Thomé, com barricas cheias de carne podre, e cuga abertura, infectando a atmosphaera, deu origem a seu des envolvimento." S. Thomé is the small Brazilian port wherefrom the barrels of putrid meat had arrived, which originated the fever.

Any poisonous or irrespirable gases that infect the atmosphere, even leaving aside the "animalculæ," bacteria, and "disease germs," curtail the supply of respirable oxygen, especially on ship-board in close quarters, alter the vitality of the blood, cause feverish reaction and self-infection. Persons exposed habitually to such a deteriorated air, will easily catch yellow fever. During the last epidemic at Rio in the hot season of 1877-78, it was noticed that proportionally a great many old European residents on shore, living in certain quarters of the metropolis, were attacked, and I saw it stated in the daily papers that one of the causes of this result was assigned to the exhalations which arose from the dug-up ground in the streets where water and *gas* pipes had been extensively laid and repaired. The air from fresh excavations of the soil as the experiences in North America and Brazil have often proved, predisposes to yellow fever. In the remittent, pernicious fevers of all wild countries, following the breaking up of virgin soil, the same influence of rising gas, combined with an alteration of the hygrometric and thermic conditions of the ground and atmosphere, appears to be potent. Of course the inhalation of noxious gas is not the only cause of yellow fever. There is the effect of heat too. But the bilge of a ship has often been compared to a drain; if you convert it into a sewer, and live and *sleep* over it, you will have sickness at sea, as on shore in a dwelling-house. Flushing and disinfecting may better such a state, but, as in the case of grain cargoes, care should be taken to avoid that the grain penetrates into the crevices and corners, from whence it is difficult to extract it, and where it rapidly decomposes when the ship gets into warm weather.

This is a suggestion to officers of such ships, who remember the words of the late Mr. W. S. Lindsay in his great work on the "History of Merchant Shipping" (III., p. 540), "In a word, the

proper stowage of a ship, whether as regards her form or the nature of her cargo, is a science which has not been sufficiently studied." As to the origin of yellow fever, I adhere to the dictum of Justus von Liebig, that "in nature never one force alone is at work, that it is by a combination of forces natural phenomena are brought about." We have to watch them all.

I remain, Sir,

Your obedient Servant,

H. S.

York Chambers, Adelphi, W.C.,

October 20th, 1878.

NAUTICAL ASSESSORS.

To the Editor of the "Nautical Magazine."

SIR,—As the time is approaching when we may expect the Board of Trade to be framing legislative themes for ships, ship-owners, and seamen, will you allow me a small space in the old Magazine to call attention to a subject which I, in common with many other shipowners, think is deserving of attention. I mean the selection of nautical assessors for particular cases. Under the old practice the Board of Trade had a list of assessors, and when an enquiry was ordered the Board itself told off two assessors from the list to take it with the Court. The objection started against the old courts of enquiry was that the Board of Trade was prosecutor and judge: It was not true, I think, but that did not matter, the cry served its purpose, and we now have a Wreck Commissioner's Court presided over by a learned judge, and a list of assessors named by the Secretary of State for the Home Department. The learned Wreck Commissioner is not like a celebrated bird, that is to say, his lordship cannot, as that bird could, be in two or more places at the same instant: and therefore a great deal of his work must be done by deputy. Where the deputy is a stipendiary magistrate, the work is probably done as well as if done by the Wreck Commissioner himself; or if not done quite as well, is done so well that the public service is in no way prejudiced. But when it happens that, instead of the Wreck Commissioner or a stipendiary taking the case, it is taken by two justices, the affair is occa-

sionally altogether different. A borough justice in a seaport is, of necessity, sometimes more or less biassed. This is only natural, for if the ship or the officers belong to the port at which the inquiry is held, it is not impossible that the owner, or some one interested, is either a business connexion, or some other connexion of one of the justices; and in that case, it may be that the finding or rejecting of a charge against a party is unintentionally and unknowingly, tinged with consideration and feeling. In saying this I would not for one moment hint that justice is not administered with purity and simpleness and honesty. The best intention and the purest honesty are consistent with charity, and what I mean is that, unintentionally and unknowingly, charity for one's friends or fellow townsmen may be an important element imperceptibly finding its way into one or other of the scales held by blind justice. To remedy this state of things I would venture to suggest that an assistant Wreck Commissioner should be appointed to take all those enquiries that cannot be taken by the learned Wreck Commissioner himself, or by the stipendiary magistrates. The chief evil of the present system is, however, in the selection of assessors. No person can be employed as an assessor whose name is not on the list of the Secretary of State. When once an individual's name is there then the question is, how shall that lucky mortal secure a good run of employment? An assessor, who is of an independent turn of mind, is likely to be less docile than a nonentity, and just in proportion to his knowledge and keenness he may be inconvenient to the Court. In exact proportion to the emptiness and self-conceit of a Justice of the Peace is the presence of an able assessor a nuisance. Now, it is only in human nature that no man, be he a Wreck Commissioner, a Stipendiary Magistrate, or a Justice of the Peace, cares to be associated with a "bothersome" assessor; and a bothersome assessor is especially one who wishes questions asked, or who has a qualm about signing a report. If a Justice of the Peace once has trouble with an assessor in this way, he will not be likely to look with anxiety for that assessor to "assist" him in another case. Hence it is that the employment of an assessor very much depends on his power of making himself agreeable. Out

of this state of things your readers would not be surprised if a system of touting for employment were to spring up. An assessor might very well, on parting, say to the magistrate, "Well, sir, if I may be permitted to say so, I think your decision in this case is admirable. I trust the whole case has been agreeable, and that you will not fail to select me next time you require an assessor," and if his worship has found things quite agreeable he is not likely to forget that "exceedingly good" assessor. To remedy such an evil as this, if it should exist, or to prevent it in time if it does not, as well as to ensure fair employment for all assessors on the list (and all assessors on the list must be deemed to be fully competent, or they would not be on the list of so high a functionary as the Secretary of State), it has been suggested to me and I daresay to many other persons, that the assessors should be taken strictly by rotation, and that they should be told off for each case as it arises either by the Wreck Commissioner or by the permanent Secretary of State for the Home Office. By this means the Wreck Commissioner himself would have an opportunity of forming a correct estimate of each assessor, and there could be no question as to a fair division of work, and as a consequence there would be no touting for work, whilst independence of thought and action would be guaranteed. I have never heard a breath of suspicion as to the competency or honesty or public spirit of any one assessor, but it has been said that some of them are exceedingly lucky in getting plenty of work, whilst others get a case only now and then, and this being the case it is hard that all of them should not be placed on one footing.

Yours faithfully,
A MASTER MARINER AND SHIPOWNER.

[We are compelled to leave over till next month our notices of books received, and sundry letters from correspondents.—ED. N.M.]

SHIPBUILDING, 1878.

SAILING SHIPS.					
Name of Port.	No. of Ships first six months.	No. of Ships added in July, Aug., & Sept.	Gross Tonnage first six months.	Gross Tonnage added in July, Aug., & Sept.	
Aberdeen ...	2	...	2,124	...	—
Banff ...	8	...	1,589	...	87
Barrow ...	2	...	472	...	358
Belfast ...	1	...	1,719	...	—
Bristol ...	1	...	16	...	—
Cowes ...	8	...	201	...	9
Dartmouth ...	27	...	2,190	...	792
Dundee ...	2	...	1,241	...	—
Faversham ...	15	...	665	...	198
Glasgow ...	30	...	81,176	...	8,003
Greenock ...	4	...	8,355	...	—
Grimsby ...	20	...	1,489	...	197
Hull ...	23	...	1,762	...	388
Jersey ...	2	...	186	...	192
Liverpool ...	10	...	7,872	...	2,819
London ...	30	...	1,357	...	414
Newcastle ...	—	...	—	...	182
Plymouth ...	8	...	535	...	189
Port Glasgow ...	5	...	4,335	...	1,260
Portsmouth ...	2	...	88	...	35
Rochester ...	7	...	274	...	210
Rye ...	12	...	698	...	283
Southampton ...	—	...	—	...	1,699
Stockton ...	1	...	1,499	...	—
Sunderland ...	16	...	11,808	...	3,766
Whitehaven ...	2	...	2,104	...	70
Workington... ..	—	...	—	...	1,064
Yarmouth ...	20	...	959	...	491
Other Ports ...	97	...	10,228	...	4,756
Totals	350	148	89,842		27,462

SHIPBUILDING, 1878.

STEAMSHIPS.

Name of Port.	No. of Ships first six months.	No. of Ships added in July, Aug., & Sept.	Gross Tonnage first six months.	Gross Tonnage added in July, Aug., & Sept.
Glasgow ...	57	30	48,533	21,202
Greenock ...	11	5	12,312	2,467
Port Glasgow	17	6	7,896	2,570
Sunderland	80	15	96,807	20,363
Newcastle ...	84	17	42,658	23,406
North Shields	18	4	10,679	4,536
South Shields	7	2	2,980	1,589
Liverpool ...	7	5	5,734	2,267
Dundee ...	6	1	6,035	853
Hartlepool ...	14	6	19,270	9,414
Aberdeen ...	3	3	1,680	3,505
London ...	11	3	752	197
Belfast ...	1	1	3,349	3,349
Stockton ...	9	4	11,761	6,841
Middlesbro'	6	5	5,026	7,477
Hull ...	3	2	3,557	4,528
Barrow ...	8	1	10,769	1,588
Whitby ...	3	2	4,243	3,327
Southampton	6	—	2,711	—
Whitehaven	—	1	—	1,273
Leith ...	6	1	1,309	36
Other Ports	17	6	1,409	1,987
Totals :—				
Steamships	274	120	239,470	122,755
Sailing Ships	350	148	89,842	27,462
Grand Total	624	268	329,312	150,237

WEATHER FORECAST FOR DECEMBER, 1878.

THE CURRENTS OR TENDENCY OF THE AIR OVER THE BRITISH ISLANDS FOR THE MONTH OF DECEMBER, 1878.

Date.	Time during which Current prevails.	Force from		General Direction from	Duration.	Force from		General Direction from
		S.	W.			N.	W.	
Dec. 1	0 h.m. to 5 h.m.	10	4	S.W.	5 m. to midnight	5	2	N.W.
2	0 m. " 6 m.	11	3	"	6 m. " "	5	2	"
3	1 m. " 6 m.	10	4	"	6 m. " 1 fol. m.	5	2	"
4	1 m. " 7 m.	10	4	"	7 m. " 2 "	5	2	"
5	2 m. " 10 m.	11	3	"	10 m. " 3 "	5	2	"
6	3 m. " 1 a.	8	6	W.S.W.	1 a. " 3 "	4	3	W.N.W.
7	3 m. " 3 a.	7	7	"	3 a. " 4 "	3	3	"
8	4 m. " 4 a.	5	9	"	4 a. " 5 "	2	4	"
9	5 m. " 5 a.	1	13	W. by S.	5 a. " 6 "	0	6	W. by N.
10	6 m. " 6 a.	1	13	"	6 a. " 7 "	0	6	"
11	7 a. to 8 next m.	0	6	"	7 m. " 7 a.	1	13	"
12	8 a. " 7 "	1	5	"	8 m. " 8 a.	3	11	"
13	9 a. " 6 "	3	3	W.S.W.	7 m. " 9 a.	7	7	W.N.W.
14	10 a. " 4 "	4	2	"	6 m. " 10 a.	9	5	"
15	10 a. " 4 "	5	2	S.W.	4 m. " 10 a.	10	4	N.W.
16	11 a. " 5 "	6	0	S.S.W.	4 m. " 11 a.	13	1	N.N.W.
17	... " ...	...	...	...	5 m. " midnight	12	2	"
18	0 m. to 7 m.	6	1	S.S.W.	7 m. " 1 fol. m.	12	2	"
19	1 m. " 9 m.	5	1	S.W.	9 m. " 2 "	11	3	N.W.
20	2 m. " noon	5	2	"	Noon " 3 "	10	4	"
21	3 m. " 3 a.	4	2	W.S.W.	3 a. " 4 "	9	5	W.N.W.
22	4 m. " 4 a.	2	4	"	4 a. " 5 "	5	9	"
23	5 m. " 5 a.	0	6	W. by S.	5 a. " 6 "	1	13	W. by N.
24	5 a. to 6 next m.	3	11	"	6 m. " 5 a.	1	5	"
25	6 a. " 6 "	6	8	W.S.W.	6 m. " 6 a.	3	4	W.N.W.
26	7 a. " 5 "	8	6	"	6 m. " 7 a.	4	3	"
27	9 a. " 3 "	11	3	S.W.	5 m. " 9 a.	5	1	N.W.
28	10 a. " 3 "	11	3	"	3 m. " 10 a.	5	1	"
29	11 a. " 4 "	11	3	"	3 m. " 11 a.	5	1	"
30	11 a. " 5 "	12	2	S.S.W.	4 m. " 11 a.	6	1	N.N.W.
31	... " ...	...	...	...	5 m. " midnight	5	1	N.W.

NOTE.—A Westerly by Northerly current due to the sun commences each day about 5 or 6 a. till the 22nd, when a W. by Southerly current will set in, commencing also about 6 a.

REMARKS.

1. It may be observed that the Table indicates

Strong Southerly Currents from the 1st to the 7th.

"	Westerly	"	"	8th	"	12th.
"	Northerly	"	"	13th	"	21st.
"	Westerly	"	"	22nd	"	25th.
"	Southerly	"	"	26th	"	31st.

2. In general, if the existing current is contrary to that mentioned in the Table, stormy or unsettled weather may be expected—if similar, fine weather with a tendency to electric action.

3. Strong easterly currents are probable during the month, and if these should occur about the time for strong westerly currents, severe easterly gales may be looked for in Scotland and southerly to westerly gales over England and Ireland—indeed the stormiest weather during the month is likely to occur about these times, viz., from the 8th to the 12th and from the 22nd to the 25th.

4. The direction in which any current is moving may be found from the following Table :—

TABLE SHOWING THE CHANGES IN WIND AND BAROMETER DURING THE PROGRESS OF CURRENTS.

Current from	Barometer rises.			Barometer falls.		
	Wind veers from	Wind backs from	Wind comparatively	Wind backs from	Wind veers from	Wind comparatively
S.W.	S.W. to N.W.	N.W. to S.W.	Light	S.W. to S.E.	S.E. to S.W.	Strong
N.W.	N.W. „ N.E.	N.E. „ N.W.	„	N.W. „ S.W.	S.W. „ N.W.	„
N.E.	N.E. „ S.E.	S.E. „ N.E.	„	N.E. „ N.W.	N.W. „ N.E.	„
S.E.	S.E. „ S.W.	S.W. „ S.E.	„	S.E. „ N.E.	N.E. „ S.E.	„
E.	E. „ S.	S. „ E.	„	E. „ N.	N. „ E.	„
W.	W. „ N.	N. „ W.	„	W. „ S.	S. „ W.	„
N.	N. „ E.	E. „ N.	„	N. „ W.	W. „ N.	„
S.	S. „ W.	W. „ S.	„	S. „ E.	E. „ S.	„

The currents from other points may be easily found in the same manner. The direction of current may also be inferred from the temperature.

MARINE INVENTIONS.

Monthly List of Patents—Communicated by Messrs. Wm. P. Thompson & Co., British and International Patent and Trademark Agents and Consulting Engineers, 6, Lord Street, Liverpool, and 828, High Holborn, London, W.C.

ENGLISH (APPLICATIONS).

4082. Edward Gardner Colton, of W. P. Thompson & Co.'s Patent Agency, 6, Lord Street, Liverpool (communication in trust for Henry Ashford, Philadelphia, U.S.) "Improvements in and appertaining to apparatus for attaching to, suspending and dis-

engaging, or detaching, ships' boats and similar bodies from the lowering tackle."

4091. Joseph Alexander Westerman, Genoa. "Improvements in appliances for raising sunken vessels and other objects."

4096. Peter Kerslake Seddon, Waltham Grove, Great Grimsby. "Improvements in ships' lights, to indicate the intended course of vessels approaching each other."

4101. John Nicholson, South Shields. "Improvements in mechanism for raising, lowering, and disengaging ships' and other boats."

4104. Wilhelm Raydt, Hanover, Germany. "Improvements in the mode of raising bodies in water and air, and in apparatus therefor."

4120. Horatio Nelson Bromhead, Glasgow. "Improvements in the purification of tidal rivers, estuaries, and coasts, the same being applicable for the removal of sewage from populous places or works not situated on rivers or coasts."

4121. Donald Ferguson, Portsea. "Improvements in apparatus to facilitate the delivery of torpedoes from ships or other vessels, part of which improvements is also applicable in taking naval, military, and other observations for use in signalling, and also as a means of saving life from fire."

4127. Arthur Wolfe Smyth, Portlick Castle, Glasson, Ireland. "Improvements connected with pumping apparatus for raising submerged ships or vessels."

4142. Arthur John Goulstone, Barnsbury, London. "Improvements in certain articles of ships' and passengers' furniture, that is to say, hammocks, life-buoys, life-belts, deck chairs and stools, cushions for chairs, which improvements are applicable, either wholly or partially, to saving life at sea."

4145. Captain George Ruxton, Liverpool. "Improvements appertaining to chocks for ships' boats, and in the mode of putting out said boats."

4150. Don Ramon de Silva Ferro, Camden Town, Lieutenant, Spanish Navy. "Improvements in the construction of life-buoys and life-belts, and in mattresses and deck seats of vessels to render the same applicable for saving life from drowning."

4209. Wilson Davenport, Ealing. "Improvements in steering signals for steamers and other vessels."

4221. Jacob Joachim Kunstätder, Budapest. "Improvements in or applicable to apparatus and fittings for effecting and facilitating the steering and propulsion of vessels, parts whereof are applicable to other purposes."

4238. Arthur Wolfe Smyth, Glasson, Ireland. "Apparatus for instantaneously altering the direction of motion and reducing the velocity of vessels."

4250. Henry Smith, Boston, U.S. "Improvement in ships' berths."

4254. John Rowlands, Liverpool. "Improvements in and relating to life-buoys."

4325. Jean Ferdinand Chauffard and Guillaume Camin Barbotin, of Arès. "Improvements in hammocks for life preserving in cases of shipwreck, or forming buoys when so required."

4340. Samuel Turner, New York. "An improved screw-propeller."

4366. Frederick Astley Whelan, Paddington, London. "Improvements in propellers, and in engines suitable for driving the same."

4394. Robert Barclay Ury Henarky John Duncan, Leicester, shipbuilder. "Improvements in the construction of ships and in apparatus in connection therewith for saving life at sea."

4395. Wm. Richardson, Limehouse, shipbuilder. "Improvements in the construction of life-boats for ships use and in apparatus for lowering, disconnecting, and raising the same, such apparatus being applicable for lowering, disconnecting and raising other ships' boats."

4410. Robert Lindon and Wm. Russell, Engineers, Liverpool. "Improvements in and relating to marine steam engines."

4418. Richard Gregory, Engineer, East Stonehouse. "Improvements in coating the bottoms of iron and other ships, and other surfaces, to prevent oxidation, the adhesion of marine animals and plants, and in compositions to be thereon employed."

4479. Thomas Greenwood and Edward Groom, London. "An apparatus for life-saving seat, for use on board steam and sailing vessels."

4492. Alexander Friedmann, Engineer, Vienna. "Improvements in apparatus for increasing the draft in the chimneys of steam ships."

4519. Wm. Henry Phillips, Nunhead. "Improvements in means and apparatus for applying motive power for propelling vessels and carriages."

4527. Josiah Latimer Clark, John Standfield, and Francis John Bolton. "Improvements in apparatus for raising sunken vessels and other submerged bodies."

ABRIDGEMENTS.

742. Louis Le Guenedal, Paris. "Improved means of shipping the rudders of vessels when at sea." This consists in using a main chain provided with a hook, one end being made fast on deck and passing over a sheave in the keel, and hooked into a small chain. This chain works in a rebate or power by means of hinged pieces provided with eyes to receive a rod which passes through them from the deck and secures them in place. To ship a new rudder this rod is pulled out of the eyes and the main chain hauled on board by the small chain. The hook on the main chain is then hooked into the spare rudder, and the chain draws it into its place, being assisted by other chains.

802. Druitt Halpin, Old Charlton. "Improvements in apparatus for recovering sunken vessels and other purposes. This consists in a combined cradle and floating dock, consisting of two pontoons joined together by a strong platform which receives the hull of the submerged vessel. Suitable means are provided for propelling and submerging the structure. For repairing, &c., sunken ships, a long watertight tower is used, open at one end to the atmosphere and provided with tools and apparatus which are worked from the tender anchored above. The workmen descend the tube and carry on their operations from it.

831. Wm. Glass Wrench, Glasgow, Engineer. "Improvements in screw or oblique bladed propellers. This consists in a propeller, the blades of which are on their acting faces in the form of quadrants, or less part of cylindrical or approximately cylindrical bands, having on the backs a graduated thickness giving the necessary strength but with sharp edges, the root of the blade

having on its inner side a flat surface which is tangential to its cylindrical surface and fits on a facet on the boss. The blades are usually bolted to facets on the boss by a number of bolts.

858. Woodbine Cloete and Wm. Patrick Churchward, 8, Clement's Inn Lane, London. "Improvements in propelling vessels." This consists in constructing a channel or recess tapering away to the ends on each side of the centre of a vessel; within each channel is placed a propeller, mounted on a shaft running parallel with the centre line of the vessel. These propellers are driven by separate engines.

872. Alfred Fernandez Yarrow, London. "Improvements in steam ships or vessels, and in the machinery or apparatus employed therein." This consists in interposing between the blower forcing air to the furnace and the fire itself a valve so constructed that in case of an explosion the gases and steam cannot reach the stokers and injure them; the valve allows the air to pass freely to the fires; secondly, the pintles of the rudder are carried by a collar on the end of the propeller shaft, thus dispensing with the usual heavy framing.

877. Edmund Walker, of Emerson, Walker & Co., Leadenhall Street, London. "Improvements in apparatus connected with raising, lowering, controlling, and stopping chain cables on board ships or vessels." This consists, first, in fitting a peculiar self-acting break to the capstan to stop or check its rotation; secondly, in an arrangement of chain-controlling gear, consisting of an arrangement of spun gearing, checking or stopping the speed of the chain passing over the conical frictional surface of the chain wheel by means of a sliding clutch operating said wheel. Various improvements are also described.

895. John Frederick Schultheis, New York, U.S. "Improvements in lifeboats." This consists in a peculiar arrangement of boat of a circular section, constructed with an outer shell working round an inner one, holding the occupants so as to relieve the motion. The boat is entirely closed in, air being supplied through air traps. The mast can be raised or lowered, and the sails set or furled from the interior of the boat. Similarly the vessel is steered. A peculiar form of water closet is provided, and air

compressing pumps and tanks provide means for operating a horn.

898. Wm. Allan, Sunderland Engine Works, Sunderland. "Improvements in inverted direct-acting marine engines." This consists in constructing the various pumps for the condenser, and for bilge and feeding purposes, worked by auxiliary engines, fed from the main or donkey boiler, thus relieving the main engine from unnecessary strain and duty, also in placing the condenser in an elevated position, and placing the operating pumps below it.

899. James Tulloch Goudie, Glasgow. "An improved bed pillow or cushion, which is applicable for the purposes of a life-buoy or float. This consists in combining cork cushions with air cushions. The cork cushions, preferably made in cells and filled with ground cork, are placed with a cellular air cushion fitted with the necessary valves between them.

909. Ellis Cutlan, Crouch Hill, London. "Improved apparatus for cleaning the bottoms of ships." This consists in a framing carrying an Archimedean screw, fitted with adjustable brushes, and which screw revolves by the action of being drawn through the water. Suitable wheels on the frame adjust the distance of the apparatus from the ship's side. Suitable tackle is provided for moving the apparatus over the ship's bottom.

930. Thomas Horsfall Watson, and Samuel Joseph Woodhouse, Leeds. "Improvements in the construction of submarine or sub-aqueous gun boats, and in the guns and projectiles to be used therewith." This consists in constructing a gun boat capable of being submerged by tanks, and fitted with chambers for holding compressed air, and meters for regulating and measuring the consumption of same. Suitable fans and blowers are provided for supplying the air, and means of exit to and from the boat are provided. The guns consist of solid spheres, working in corresponding sockets, and bored out and packed so as to deaden the shock on firing, and so as not to admit water to the boat. The projectiles are furnished with a steel point, and with hooks for raising and lowering and fit the gun, so as to prevent escape of gas.

920. Thomas Byas, of Glasgow, Carpenter. "Improvements in reefing and furling sails, and in the apparatus employed therefor."

This consists in fitting a sprocket wheel or whelped boss to the yard, carried by the sling bands which support the yard. A chain passes over the wheel to the deck, so that the yard can be caused to revolve and wind up the sail on it, and so furl it. Clip pieces steady the leeches of the sail while being furled. Each square sail is split down the centre, so as to clear the sling band, an arrangement being fitted to prevent escape of wind through the gap in the sail.

1018. Robert Henry Armit, London. "Improvements in the construction of ships' propellers, and other like articles with helical surfaces." This consists in the construction of cycloidal screw propellers, and like articles, by adapting the process of "sweeping" to the formation of the moulds for the blocks, and can only be thoroughly understood on reference to the formulæ and drawings given in the specification.

1171. Sir Joseph Whitworth, Manchester. "Improvements in armour for ships and forts." This consists in constructing armour in the form of concentric rings of fluid pressed steel screwed to the backing, the outer ring of each section being hexagonal, by means of which the various sections fit into each other. The various sections on each opposite side can be connected by tubular stays, which can form the deck beams.

1244. Henry Daniel Deane, Brooklyn, U.S. "Improvements in screw propellers." This consists in perforating the blades with a series of conical perforations, the object being to transform the back water into a strong current, so as to increase the superficial area acted on by the water.

1308. James Shaw, 94, Aldersgate Street, London. "Improvements in apparatus for preventing the sudden capsizing of ships or vessels." This consists of an inner block, preferably of a truncated conical form, working in an outer block, and pressing against the interior of the outer block by springs. When unusual pressure is brought to bear on the inner block (to which the sheet of the sail is attached, the outer one being attached to the deck), it slides up within the outer block, easing the sheet, and if the pressure still continue, it will fly out, letting go the sail.

1344. Samuel Canning, London, Knight. "Improvements in

apparatus for communicating signals on shipboard." This consists in fixing the receiving and transmitting wires of mechanical telegraphs over intermediate pulleys placed in any part of the ship, so that, in case any individual instrument or wire should break down, the others are not affected thereby.

2068. John Baird, New York. "Certain new and useful improvements in machinery for propelling vessels, some of which are applicable to other purposes." Part of these improvements have been previously described. The second part consists in a form of compound beam engine for driving screw engines of a compact form, and using a short beam, connected to which are two diagonal arms, one on each side of the engine, and to which the connecting rods from the cranks are coupled. A peculiar form of pillow block is shown, and also an arranged balanced puppet for the cylinders.

1803. John Louis Lay, Paris. "Improvements in torpedo boats, and in apparatus for facilitating the launching, guiding, controlling, and supervision of the same; and for removing or destroying torpedoes, mines, and other obstructions placed in harbours, rivers, or the like." This consists in various improvements on his previous patent 747, of 1878, and consists in a mode of using quicklime to generate the ammoniacal gas by heat, to drive the engines, in a mode of making the boat tow a number of torpedoes or smaller boats, in a submarine float for launching the said torpedo boats, in a mode of launching the same from ironclads, in a mode of making the torpedo boat indicate the presence of obstructions, and in modes of destroying submerged mines, together with various minor improvements too lengthy to describe here, but which are well shown in the voluminous specification.

1805. Andrew Betts Brown, Rosebank Iron Works, Edinburgh. "Improvements in hydraulic capstans, and in valves for distributing the fluid pressure to the engines thereof." It consists, first, in an arrangement of revolving eccentric pawls attached to the light-powered capstan barrel, in conjunction with levers and pawls, to enable the inventor to obtain very high and variable hauling powers on a larger capstan drum, running on a turntable, and encircling the upper capstan; secondly, in an improved form

of valve face revolving with the upper casing, and causing the distributing parts to pass over a revolving valve ring, carried by a stationary eccentric. The ring revolves against the revolving face, taking up wear and tear.

1872. James Forster, Glasgow. "Improvements in screw propellers." This consists in constructing propellers with one or more sets of blades abaft the first. The first set of blades are set at a high pitch. The next set has the edges of its blades set in the same plane as the first set, but with each blade intermediate in its angular position to those of the first set. Each further set of blades is set at a faster pitch.

1898. Thos. Horsfall Watson and Joseph Woodhouse. "Improvements in the construction and manufacture of armour plates." Between the outer shield or armour and the teak backing are placed strong spiral springs coiled on bolts. The springs at their lower ends work against metal caps, sliding in metal cases or shoes, packed with flexible packing to deaden the shot when the armour is hit by a shot and depressed.

1425. Charles Smith, Hartlepool, Engineer. "Improvements in marine steam boilers." It consists in the combination with a horizontal boiler with fire-tubes in the ordinary way, of furnaces placed in iron shells lined with fire-brick and placed below the lateral parts of the main shell, being dry and not surrounded by waterspaces. An arrangement of iron shell and brick screen surrounds the furnaces to prevent radiation.

2152. Sir Henry de Burgh Lawson, Gatherley Castle. "Improvements in the construction and propulsion of armour-clad ships and vessels in general." This consists in having the propellers or wheels working in air-tight trunks or compartments in the bottom, several keels being used. The steam and smoke are sent overboard. The armour-plating is built up in layers of steel or iron, cork, rubber, or compressed paper. Suitable pumps force the smoke and steam overboard, and exhaust air from the propeller chambers or maintain a pressure therein.

AMERICAN.

208473. Henry M. Green, Camden, N.J. "Ships' tables and life-preservers." This consists of a table so constructed as to be

readily increased in size, and provided with strips and removeable ledges for holding charts for examination. Forming part of the table are a series of watertight lockers, so made that they are watertight and can contain papers and valuables, besides rendering the table buoyant. Rounds are attached to the legs of the table, and life-ropes attached, so that in case of wreckage the table floats bottom upwards, forming a large life-buoy, to which several or many may cling.

208529. Samuel Choud, Boston, Mass. "Ships' pumps." This consists of two chambers, one containing two circular flat-faced valves and the other containing an elastic diaphragm which performs the duty of a piston. Above the diaphragm is a perforated convex disk fitting it and serving to allow any waste water leaking through to escape. A simliar disk but concave is bolted to the under side of the diaphragm, and which allows air accumulating below said disk to escape through the perforation. The cover over the valves is easily removed and an air chamber can be added to convert it into a force pump.

FRANCE.

122999. Griffiths. "Improvements in propelling steamships or vessels."

123101. Fielder. "Improvements in apparatus for cleansing ships' bottoms and other submarine structures."

123370. Berthon. "A construction of folding or flexible boats and pontoons."

123584. Norrenberg. "Towing on endless cables."

123605. Lay. "A torpedo boat."

123618. Clark and Standfield. "Improvements in floating docks and pontoons."

123856. Malézé. "A marine propeller with moveable winglets."

GERMANY.

3027. O. and M. Mechnig, Berlin. "Improvements in valves for air and life cushions."

3413. F. J. Meyer and Wm. Wernigh, Berlin. "Modifications in wire rope and chain steam tugs."

8424. R. Tietz, Berlin. "A towing apparatus for boats."

MONTHLY ABSTRACT OF NAUTICAL NOTICES.

No.	PLACE.	SUBJECT.
301	ENGLAND—Entrance to Thames	Alteration in light-vessel and buoys.
302	" Scilly Islands—Broad and Crow Sound	New buoys.
303	" West Coast—Milford Haven	Removal of buoys.
304	" " Liverpool Bay	Addition and alteration in buoyage.
305	FRANCE—North Coast—Caen Road—Oyestreham	New tidal light.
306	" West Coast—Brest—Capuchins Point	Alterations in light.
307	NORTH SEA—Ems River—Borkum Flat	Position of light-vessel.
308	" Elbe River—Schulan light-ship	Alteration in position.
309	NORWAY—West Coast—Stordöen Island—Leervig	Additional notice about light.
310	BALTIC—Bornholm Island—Adlergrund	New buoys.
311	" Bothnia Gulf—Sundswall—Draghall Rock	Temporary light.
312	" Gulf of Finland—Renskar Island	Re-exhibition of light.
313	PORTUGAL—Lima River—Fort Vianna	New harbour light.
314	MEDITERRANEAN—Bonifacio Strait—Buddello Island	Position of rock determined.
315	" " Sta. Maria Pass	Position of rock determined.
316	" " Lavezzi Island	Correction respecting light.
317	" Italy—Porto-Canale, Fiumicino	Alteration of lights on moles.
318	" Sicily—Pozallo	Light proposed.
319	ADRIATIC—Brazza Island—Port San Pietro	New harbour light.
320	MEDITERRANEAN—Grecian Archipelago—Salamis Bay—Lipso Island	Particulars of light.
321	" " Zea Island—Port St. Nikols	Particulars of light.
322	" " Euripo Channel	New harbour light
323	" " Gulf of Volo	Torpedoes.
324	NORTH ATLANTIC—Reported Rock	Not found when sought for.
325	CHINA SEA—Macassar Strait	Discovery of sand banks.
326	CHINA—East Coast—Mirs Bay—Basalt Island	Position of rock.
327	" Gulf of Pechili—Peiho River—Taku Bar	New light-vessel.
328	NORTH PACIFIC—Gulf of Tartary—Castries Bay—Klostercamp Point	New light.
329	AUSTRALIA—Victoria—Port Western	Prohibited anchorage near telegraph cable.
330	NEW ZEALAND—North Island Manawatu River	Pilot station and new beacon lights.
331	" " Cape Maria Van Dieman	Light proposed.
332	" " Hokianga River	Changes in bar and directions.
333	" Foveaux Strait—Centre Island	Light now exhibited.
334	UNITED STATES—S. Carolina—Charleston harbour—Fort Ripley Shoal and Castle Pinckney	New light, and also light discontinued.
335	CANADA—Nova Scotia—Halifax harbour	Particulars of outer buoy with whistle.

NAUTICAL NOTICES.

301.—**ENGLAND.**—*Entrance to the River Thames.*—*Alteration of Position of Swin Middle Light-vessel and S.W. Middle Buoy.*—*Bell Buoy in East Swin.*—In consequence of the Middle Sand having extended to the southward and westward, the Swin Middle light-vessel has been moved two cables S.W. by W. $\frac{1}{4}$ W., and the S.W. Middle buoy four cables S.W. The Swin Middle light-vessel now lies in $5\frac{1}{2}$ fathoms at low water spring tides, with the following bearings, viz.:—Whitaker beacon, N. by E. $\frac{1}{4}$ E., distant $1\frac{1}{10}$ th mile;—Whitaker buoy, N.E. $\frac{1}{2}$ E., distant $2\frac{1}{10}$ ths miles; North Hook Middle buoy, E. by N. $\frac{1}{2}$ N., distant $2\frac{1}{10}$ ths miles; S.W. Middle buoy, S. $\frac{3}{4}$ W., distant $5\frac{1}{2}$ cables; N.E. Barrows buoy, S. $\frac{1}{4}$ E., distant 2 miles; N.E. Maplin buoy, S.W. $\frac{1}{2}$ S. Slr., distant 2 miles. The S.W. Middle buoy now lies in 19 feet at low water spring tides, with the following bearings, viz.:—Swin Middle light-vessel, N. $\frac{3}{4}$ E., distant $5\frac{1}{2}$ cables; Whitaker buoy, N.E., distant $3\frac{1}{10}$ th miles; N.E. Barrows buoy, S. $\frac{1}{4}$ E., distant $1\frac{1}{10}$ th mile; N.E. Maplin buoy, S.W. $\frac{1}{2}$ W., distant $1\frac{1}{10}$ th mile. A new can buoy will shortly be placed about midway between the S.W. Middle and North Hook Middle buoys. And a bell buoy has been substituted for the Conical buoy at Swin Spitway.

302.—**ENGLAND.**—*Scilly Islands.*—*New Buoys in Broad and Crow Sounds.*—An 8-foot can buoy, painted in *black and white stripes*, has been placed to the southward of the Gunner rocks in Broad sound, and lies in 10 fathoms at low water spring tides, with the following mark and bearings, viz.:—Scilly rock, rather more than its apparent length east of Maiden Bower, N.E. $\frac{1}{4}$ N., distant 4 miles; Bishop rock lighthouse, S.W. by W. $\frac{1}{4}$ W., distant $1\frac{7}{10}$ ths mile; St. Agnes Lighthouse (over southern Cairn of Annet), S.E. by E. $\frac{3}{4}$ E., distant $2\frac{7}{10}$ ths miles. Also, an 8-foot conical buoy, painted *black* has been placed to the southward of the Hats rocks in Crow sound, and lies in 5 fathoms at low water spring tides, with the following mark and bearings, viz.:—Peak of Menwethan open south of Great Arthur, E. $\frac{1}{4}$ S.; Point of Tolls island, south, distant $\frac{1}{10}$ ths of a mile; Inisidgen point, West, distant $\frac{3}{10}$ ths of a mile.

Note.—These buoys have been placed in order to afford facility to vessels frequenting Broad and Crow sounds.

303.—ENGLAND.—*West Coast.*—*Milford Haven.*—*Buoy Marking Torpedo Ground in Sand Haven Bay.*—With reference to notice 128, p. 565, torpedo practice being concluded for the season, *the buoy has been removed.*

304.—ENGLAND.—*West Coast.*—*Liverpool Bay.*—*Additions and Alterations in Buoyage.*—On 20th November, 1878, or as soon after as the weather will permit, the following additions and alterations will be made in the buoyage of Queen channel, Formby channel, and Helbre Swash:—

Queen Channel.—Q 3 red can buoy will be moved $3\frac{1}{2}$ cables N.W. $\frac{1}{2}$ W., and placed in 12 feet; Q 4 red can buoy will be moved 5 cables W.N.W., and placed in 13 feet; Q 5 red can buoy (*additional*) will be placed nearly $7\frac{1}{2}$ cables S.E. by E. $\frac{1}{4}$ E. from Q 4 buoy, in 13 feet.

Formby Channel.—Two additional buoys will be placed on the west side of Formby pool, near the eastern edge of Jordan bank. F 2 red can buoy will be moved to the northward, and moored $7\frac{1}{2}$ cables S.S.E. of F 1 buoy, in 10 feet; F 3 red can buoy (*additional*) will be placed $7\frac{1}{2}$ cables S.S.E. of F 2 buoy, in 10 feet; F 4 red can buoy (*additional*) will be placed $7\frac{1}{2}$ cables S.S.E. of F 3 buoy, in 10 feet; F 5 red can buoy with perch and ball will be the F 3 buoy re-numbered.

Helbre Swash.—Two additional buoys will be placed on the western side of Helbre Swash; and one additional buoy on the eastern side. HE 1 Red Can buoy will be moved 5 cables N.W., and placed in 18 feet; HE 2, 3, 4, and 5 Red Can buoys will be placed at equal distances of $\frac{1}{4}$ ths of a mile, commencing from the new position of HE 1 buoy, along the northern and eastern curves of West Hoyle bank; HE 2 Black Nun buoy will be moved $2\frac{1}{2}$ cables to the northward, and placed in 20 feet; HE 3 and 4 Black Nun buoys will be placed at equal distances of $\frac{1}{4}$ ths of a mile, commencing from the new position of HE 2 buoy, along the western edge of East Hoyle bank; HE 5 Black Nun buoy will be the HE 4 buoy renumbered, and will occupy the same position near the western edge of Lime wharf.

Note.—All depths given are for low water spring tides. *Variation*, 21° *W*.

305.—FRANCE.—*North Coast.*—*Caen Road.*—*Tidal Light at Oyestreham.*—Since 15th September, 1878, a tidal light has been exhibited from the platform, on the eastern side of the channel at Oyestreham, Orne river entrance :—It is a *fixed green* light, shown from 3 hours before to 3 hours after high water ; elevated 30 feet above the sea, and visible about 4 miles. The light is shown from an iron support, 23 feet high, and replaces the fixed green light which was temporarily exhibited. Position, lat. $49^{\circ} 16' 50''$ *N.*, long. $0^{\circ} 14' 55''$ *W*.

Caution.—The lights at Oyestreham in line do not indicate the fairway of Orne river entrance ; they can only be used by those well acquainted with the channel, which is intricate and shifting.

306.—FRANCE.—*West Coast.*—*Brest Road.*—*Alterations in Capucins Point Light.*—On 15th October, 1878, the following alterations were made in the light exhibited from Capucins point, Quêlern (Kêlernn) peninsula, Brest road :—The light, *fixed white*, has been increased in power, and should now be visible $13\frac{1}{2}$ miles, through an arc of 13° , or between the bearings *N. $88^{\circ} \frac{1}{2}$ E.* and *S. $78^{\circ} \frac{1}{2}$ E.* (this bearing leads southward of Royale and Large shoals). To the northward, a narrow ray of light will continue to be shown over the position of Les Fillettes rocks.

307.—NORTH SEA.—*Ems River.*—*Position of Borkum Flat Light-Vessel.*—This light-vessel has been found to be about $2\frac{1}{2}$ miles *S. by E. $\frac{1}{4}$ E.* of the position previously given. Position (1878), lat. $53^{\circ} 49' 10''$ *N.*, long. $6^{\circ} 28' 25''$ *E.* *Variation*, $15\frac{1}{4}^{\circ}$ *W*.

308.—NORTH SEA.—*Elbe River.*—*Alteration in Position of Schulau Light-Vessel.*—On 8th October, 1878, consequent on the shifting of the sand ridge below Hanskalb sand, Schulau light-vessel was shifted north-west of her former position for a distance of about $1\frac{1}{2}$ cables.

309.—NORWAY.—*West Coast.*—*Stordœn Island.*—*Light at Leervig.*—With reference to Notice 285, page 1,035, on the intended exhibition of a light at Leervig, south-east coast of Stordœn island :—On 20th October, 1878, the light would be exhibited from the southern gable of the keeper's dwelling (painted white),

situated on the south point of Midtö islet. It is a *fixed white* light, elevated 49 feet above the sea, and visible between the bearings N.E. by E. (through west) and S.S.W., from a distance of 9 miles. The light will be exhibited from 15th July to 15th May following. Position, lat. $59^{\circ} 46' 50''$ N., long. $5^{\circ} 32' 55''$ E. Variation, 18° W.

310.—BALTIC.—*Bornholm Island.*—*Buoyage of the Bank Adlergrund.*—Three monster buoys (two red and one black) now mark the plateau of the Adlergrund to the S.W. of the island of Bornholm.

311.—BALTIC.—*Gulf of Bothnia.*—*Sweden.*—*Sundswall.*—*Temporary Light on Draghall Rock.*—Pending the construction of a lighthouse, a temporary light is now exhibited from Draghäll rock, approach to Sundswall harbour :—It is a *fixed and flashing* light, showing *flashes and eclipses* of *one second* duration alternately between the bearings N. 35° W. and N. 50° W. ; *fixed* between N. 50° W. and N. 60° W. ; and *two flashes*, each of *one second* duration, followed by an eclipse, between N. 60° W. and N. 75° W. ; in the channel leading to Sundswall a *fixed* light is also shown. The light should be visible about 8 miles. Position, lat. $62^{\circ} 20' 10''$ N., long. $17^{\circ} 28' 30''$ E.

Note.—On the completion of the lighthouse, a light of greater power will be exhibited. Variation, 9° W.

312.—BALTIC.—*Gulf of Finland.*—*Barö Sound.*—*Renskar Island Light.*—With reference to Notice 222, page 854, on the temporary discontinuance of Renskar island light, on the 20th August, 1878, the light was re-exhibited.

313.—PORTUGAL.—*Lima River Entrance.*—*Harbour Light on Fort Vianna.*—On 5th October, 1878, a harbour light was exhibited from the northern bastion of fort Vianna, north side of Lima river entrance. It is a *fixed red* light, elevated 48 feet above high water, and visible 7 miles. Position approximate, lat. $41^{\circ} 41' 15''$ N., long. $8^{\circ} 44' 0''$ W.

314.—MEDITERRANEAN.—*Bonifacio Strait.*—*Sunken Rock South-West of Budello Island.*—This rock (Budello), the position of which has been determined by the surveying vessel *Washington*, with a depth of $3\frac{1}{4}$ fathoms over it, and 15 fathoms around, lies

with the west extreme of Budello Island bearing N.E., distant 6 cables. Position approximate, lat. $41^{\circ} 16' 30''$ N., long. $9^{\circ} 20' 15''$ E. Another rocky patch on which the least water found was $8\frac{1}{2}$ fathoms, lies about half a cable westward of Budello rock, with a depth of 16 fathoms between them.

315.—MEDITERRANEAN.—*Bonifacio Strait*.—*Sunken Rock in Sta. Maria Pass*.—This rock (Sta. Maria), the position of which has been determined by the surveying vessel *Washington*, is about half a cable in length north and south, with a least depth on its northern part of $3\frac{3}{4}$ fathoms; it lies with the west extreme of Corceli (Barrettini) islands bearing S.E. $\frac{3}{4}$ S., distant $2\frac{1}{2}$ cables. Position approximate, lat. $41^{\circ} 17' 50''$ N., long. $9^{\circ} 24' 10''$ E. The position of this rock is, from the strong current ripple near it, generally perceptible. Vessels navigating Sta. Maria Pass, should keep on the western side of mid-channel. Variation, $13\frac{1}{4}^{\circ}$ W.

316.—MEDITERRANEAN.—*Light on Lavezzi Island*.—The red sector, which is shown over Lavezzi rock from Lavezzi island lighthouse, is visible through an arc of 80° . The red sector which is also shown over Lavezzi rock from Razzoli island lighthouse, is visible through an arc of 7° .

Note.—Point Galera (Light Proposed) is the most northern point of Caprera island, and not the north-eastern point as heretofore shown on some charts.

317.—MEDITERRANEAN.—*Italy*.—*Alteration in the Lights on the Moles of Porto-Canale, Fiumicino*.—The light on the north mole is now red; that on the south mole green.

318.—MEDITERRANEAN.—*Sicily*.—*South Coast*.—*Light at Pozallo*.—It has been decided to establish a fixed red light at Pozallo.

319.—ADRIATIC.—*Brazza Island*.—*Harbour Light at Port San Pietro*.—A harbour light is now exhibited from the mole head at port San Pietro, north coast of Brazza island. It is a fixed green light, shown from a small stone turret, 21 feet high, and visible through an arc of 180° , or between the bearings N.W. $\frac{1}{4}$ N. (through south) and S.E. $\frac{1}{2}$ S., from a distance of 5 miles. Position approximate, lat. $43^{\circ} 23' 10''$ N., long. $16^{\circ} 38' 3''$ E.

320.—MEDITERRANEAN.—*Grecian Archipelago*.—*Salamis Bay*.

—*Light on Lipso Island.*—The following information has been received from Commander W. H. Hall, H.M.S. *Flamingo*, 1878, relative to the light exhibited on the East part of Lipso island, Salamis bay. It is a *fixed* and *flashing* light, showing a *flash* of *ten seconds'* duration every *two minutes*; the *fixed* light is visible for *ninety seconds*; the *flash* is preceded and followed by an eclipse lasting *ten seconds*. Within the distance of 2 or 3 miles from the light the eclipses are not total.

321.—MEDITERRANEAN.—*Grecian Archipelago.*—*Zea Island.*—*Light at Port St. Nikolo.*—This light, exhibited at port St. Nikolo, north-west coast of Zea island, is a *fixed* and *flashing* light, showing a *flash* every minute.

322.—MEDITERRANEAN.—*Grecian Archipelago.*—*Euripo Channel.*—*Harbour Light on the Western Point, Burj Narrows.*—A harbour light is now exhibited from a mast near the extremity of the Western point, Burj narrows, Euripo channel. It is a *fixed white* light, elevated about 40 feet above the sea; visible about 7 miles.

323.—MEDITERRANEAN.—*Gulf of Volo.*—*Torpedoes.*—The Turkish authorities having laid down torpedoes in Volo harbour, caution is necessary in taking up an anchorage.

324.—NORTH ATLANTIC OCEAN.—*Unsuccessful Search for a reported Rock.*—The U.S.S. *Alaska*, has lately sounded in the vicinity of a rock reported to exist in lat. $25^{\circ} 34' N.$ and long. $41^{\circ} 23' W.$, with the following results:—June 29, 8 a.m., lat. $26^{\circ} 4' N.$, long. $43^{\circ} 2' W.$, 2,168 fms.; June 29, 7 p.m., lat. $25^{\circ} 51' N.$, long. $42^{\circ} 17' W.$, 2,210 fms.; June 30, 3 p.m., lat. $25^{\circ} 3'$, long. $41^{\circ} 23' W.$, 2,413 fms.; June 30, 7 p.m., lat. $25^{\circ} 34' 30'' N.$, long. $41^{\circ} 10' W.$, 1,105 fms. The bottom at each cast was found to be light-gray globular ooze. A vigilant look-out during the time failed to discover any indications of a rock or shoal water. The rock above referred to was reported by the master of the Austrian barque *Antoinetta*, in 1874, as having been seen by him at 9 a.m. March 19th of that year.

325.—CHINA SEA.—*Macassar Strait.*—*Banks.*—The recent discovery of two sand banks in Macassar strait is announced; one lies in lat. $2^{\circ} 58' 30'' S.$, long. $117^{\circ} 33' E.$; the other in lat.

3° 10' S., long. 117° 48' 25" E; both uncover, are surrounded by rocks, and have shoal water near them which may extend to southward as far as lat. 3° 15' S.

826.—CHINA.—*East Coast.*—*Mirs Bay.*—*Sunken Rock Eastward of Basalt Island.*—A sunken rock has recently been discovered lying about $3\frac{1}{2}$ miles eastward of Basalt island, approach to Mirs bay; and in the track of vessels proceeding along the coast northward of Hong Kong. This rock (*Victor*) is reported to be about 40 feet long, in a north-east and south-west direction, and 30 feet broad, with 3 fathoms over it at low water spring tides, and 15 fathoms close around, and to lie with the following bearings, viz., Fung head N. 16° W.; south extreme of Basalt island, N. 87° W. East Ninepin in line with south extreme of South Ninepin, S. 55° W. These bearings would place the rock in lat. 22° 17' 55" N., long. 114° 26' 15" E.

827.—CHINA.—*Gulf of Pechili.*—*Peiho River Entrance.*—*Light Vessel off Taku Bar.*—On 4th August, 1878, a light was exhibited from a light-vessel (s.s. *Aden*), moored in 17 feet at low water ordinary spring tides, about $5\frac{1}{2}$ miles south-eastward of Taku bar, Peiho river entrance. It shows a *fixed white* light, elevated 36 feet above the sea, and visible 10 miles. Position as given, lat. 38° 53' N., long 117° 50' 30" E.

Note.—From Taku bar light-vessel, Bar Entrance buoy (red) bears N. 35° W., distance $3\frac{1}{2}$ miles. *Variation*, $2\frac{1}{4}$ ° W.

828.—NORTH PACIFIC.—*Gulf of Tartary.*—*Castries Bay.*—*Light on Klostercamp Point.*—A light is now exhibited from a lighthouse recently constructed on Klostercamp (Quoin) point, entrance to Castries bay. It is a *fixed white* light, elevated 262 feet above the sea and visible 8 miles. This new lighthouse, painted red with white lantern, is situated 69 feet within the south extreme of Klostercamp point, and 42 feet westward of the site of the old lighthouse, which has been removed.

829.—AUSTRALIA.—*Victoria.*—*Port Western.*—*Prohibited Anchorage near Telegraph Cable.*—To afford protection to the submarine telegraph cable at port Western, vessels are not to anchor off Flinders within the area comprised between the following bearings of Flinders jetty head, viz., N.W. † N. and

W. $\frac{1}{2}$ S.; at night this area is marked by the *white* light shown from Flinders jetty. *Variation*, $8\frac{1}{2}^{\circ}$ E.

830.—NEW ZEALAND.—*North Island*.—*Pilot Station and Beacon Lights at Manawatu River Entrance*.—The pilot station, situated on the northern side of the river entrance, is distinctly seen from seaward; and the International Code, the Colonial Tide and Danger or Bar Signals may be used. Two *moveable beacons* have also been erected, which, kept in line, lead over the bar, and may be seen from a distance of 2 or 3 miles. The outer beacon is painted *red*, the inner *black*. In addition to the permanent light (fixed white) exhibited from the flagstaff, visible 9 miles, there will also be shown, when there is sufficient water on the bar, a *fixed green* light from the outer beacon, and a *fixed red* light from the inner beacon.

831.—NEW ZEALAND.—*North Island*.—*North Coast*.—*Light at Cape Maria Van Diemen*.—It is intended (probably in January, 1879), to exhibit a light from a lighthouse now in course of erection on the islet lying about half a mile northwestward of cape Maria Van Diemen. It will be a *revolving white* light, attaining its greatest brilliancy *every minute*. From the lower part of the lighthouse a *fixed red* light will be shown in the direction of Columbia reef. Further notice will be given of the precise date on which the light will be exhibited.

832.—NEW ZEALAND.—*North Island*.—*West Coast*.—*Changes in Hokianga River Bar*.—The following sailing directions for Hokianga river bar, are the result of a recent survey (1878) made by the Colonial steam-vessel *Stella*. The shoals forming the bar at the river entrance extend as formerly, in a north-west and south-east direction for about 2 miles, at the distance of from $1\frac{1}{2}$ to $1\frac{3}{4}$ miles from the Heads, with two channels (North and South), in both of which a least depth of 18 feet was found at low water spring tides. In the former main channel, a depth of only 9 feet was found; consequently, the beacons for this channel have been removed, and will not again be erected. The soundings close outside the bar, decrease suddenly from 8 to $3\frac{1}{2}$ fathoms. Monaganui bluff, in line with a low point about six miles south-east of Outer South head, leads close outside the bar shoals.

W. $\frac{1}{2}$ S.; at night this area is marked by the white light shown from Flinders jetty. Variation, 8° E.

330.—NEW ZEALAND.—North Island.—East Coast.—*Light and Beacon Lights at Manawatu River Entrance.*—The light station situated on the northern side of the river entrance, is distinctly seen from seaward; and the International Code, the Danger, Life and Danger or Bar Signals may be read. Two secondary beacons have also been erected, which, kept in line, will serve to guide, and may be seen from a distance of 2 or 3 miles. The outer beacon is painted red, the inner black. In addition to the permanent light (fixed white) exhibited from the lighthouse, at night there will also be shown, when there is sufficient water on the bar, a fixed green light from the outer beacon, and a fixed red light from the inner beacon.

331.—NEW ZEALAND.—North Island.—North Coast.—*Light at Cape Maria Van Diemen.*—It is intended (probably in January, 1879), to exhibit a light from a lighthouse erected on a small islet on the islet lying about half a mile north-east of Cape Maria Van Diemen. It will be a revolving light, showing its greatest brilliancy every minute. From the tower of the lighthouse a fixed red light will be shown to the south of Columbia reef. Further notice will be given of the position on which the light will be exhibited.

332.—NEW ZEALAND.—North Island.—East Coast.—*Hokianga River Bar.*—The following notices, in relation to the Hokianga river bar, are the result of a recent survey made by the Colonial steam-survey vessel. The bar is situated at the river entrance, and extends in a line, in an easterly or east direction for about 2 miles at low water, and 3 miles from the Heads, with two shoals, both of which a boat can pass at low water. The bar is subject to spring tides. In the year 1878, a schooner named "Andaman" was found; consequently, the position relating to the bar and its harbour and its

3° 10' S., long. 117° 48' 25" E; both uncover, are surrounded by rocks, and have shoal water near them which may extend to southward as far as lat. 3° 15' S.

326.—CHINA.—*East Coast.*—*Mirs Bay.*—*Sunken Rock Eastward of Basalt Island.*—A sunken rock has recently been discovered lying about 3½ miles eastward of Basalt island, approach to Mirs bay; and in the track of vessels proceeding along the coast northward of Hong Kong. This rock (*Victor*) is reported to be about 40 feet long, in a north-east and south-west direction, and 30 feet broad, with 3 fathoms over it at low water spring tides, and 15 fathoms close around, and to lie with the following bearings, viz., Fung head N. 16° W.; south extreme of Basalt island, N. 87° W. East Ninepin in line with south extreme of South Ninepin, S. 55° W. These bearings would place the rock in lat. 22° 17' 55" N., long. 114° 26' 15" E.

327.—CHINA.—*Gulf of Pechili.*—*Peiho River Entrance.*—*Light Vessel off Taku Bar.*—On 4th August, 1878, a light was exhibited from a light-vessel (s.s. *Aden*), moored in 17 feet at low water ordinary spring tides, about 5½ miles south-eastward of Taku bar, Peiho river entrance. It shows a *fixed white* light, elevated 36 feet above the sea, and visible 10 miles. Position as given, lat. 38° 53' N., long 117° 50' 30" E.

Note.—From Taku bar light-vessel, Bar Entrance buoy (red) bears N. 35° W., distance 3½ miles. *Variation*, 2¼° W.

328.—NORTH PACIFIC.—*Gulf of Tartary.*—*Castries Bay.*—*Light on Klostercamp Point.*—A light is now exhibited from a lighthouse recently constructed on Klostercamp (Quoin) point, entrance to Castries bay. It is a *fixed white* light, elevated 262 feet above the sea and visible 8 miles. This new lighthouse, painted red with white lantern, is situated 69 feet within the south extreme of Klostercamp point, and 42 feet westward of the site of the old lighthouse, which has been removed.

329.—AUSTRALIA.—*Victoria.*—*Port Western.*—*Prohibited Anchorage near Telegraph Cable.*—To afford protection to the submarine telegraph cable at port Western, vessels are not to anchor off Flinders within the area comprised between the following bearings of Flinders jetty head, viz., N.W. ½ N. and

W. $\frac{1}{2}$ S.; at night this area is marked by the *white* light shown from Flinders jetty. *Variation*, $8\frac{1}{4}^{\circ}$ E.

330.—NEW ZEALAND.—*North Island*.—*Pilot Station and Beacon Lights at Manawatu River Entrance*.—The pilot station, situated on the northern side of the river entrance, is distinctly seen from seaward; and the International Code, the Colonial Tide and Danger or Bar Signals may be used. Two *moveable beacons* have also been erected, which, kept in line, lead over the bar, and may be seen from a distance of 2 or 3 miles. The outer beacon is painted *red*, the inner *black*. In addition to the permanent light (fixed white) exhibited from the flagstaff, visible 9 miles, there will also be shown, when there is sufficient water on the bar, a *fixed green* light from the outer beacon, and a *fixed red* light from the inner beacon.

331.—NEW ZEALAND.—*North Island*.—*North Coast*.—*Light at Cape Maria Van Diemen*.—It is intended (probably in January, 1879), to exhibit a light from a lighthouse now in course of erection on the islet lying about half a mile northwestward of cape Maria Van Diemen. It will be a *revolving white* light, attaining its greatest brilliancy *every minute*. From the lower part of the lighthouse a *fixed red* light will be shown in the direction of Columbia reef. Further notice will be given of the precise date on which the light will be exhibited.

332.—NEW ZEALAND.—*North Island*.—*West Coast*.—*Changes in Hokianga River Bar*.—The following sailing directions for Hokianga river bar, are the result of a recent survey (1878) made by the Colonial steam-vessel *Stella*. The shoals forming the bar at the river entrance extend as formerly, in a north-west and south-east direction for about 2 miles, at the distance of from $1\frac{1}{2}$ to $1\frac{3}{4}$ miles from the Heads, with two channels (North and South), in both of which a least depth of 18 feet was found at low water spring tides. In the former main channel, a depth of only 9 feet was found; consequently, the beacons for this channel have been removed, and will not again be erected. The soundings close outside the bar, decrease suddenly from 8 to $3\frac{1}{2}$ fathoms. Monaganui bluff, in line with a low point about six miles south-east of Outer South head, leads close outside the bar shoals.

Leading Mark for North Channel.—Andrew's store (the southern house on the beach in Martin's bay) in a line with the extreme of South head, bearing E. $\frac{1}{4}$ N.

Leading Mark for South Channel.—The Schoolhouse (a conspicuous single white building on the rising ground northward of the old Pilot's house) in line with the extreme of South head, bearing N.E. $\frac{1}{4}$ E.

Directions.—South head, 150 feet high, has a large white signal staff on it, from which the International Code and general signals for New Zealand ports are shown. Mariners should be guided by these signals, especially the Semaphore arm (*see* page 13, New Zealand Pilot) by which vessels are directed over the bar, to a position within the Heads where a pilot will board them.

Note.—From the frequent changes of the bar, mariners are cautioned not to place reliance on the leading marks for the channels, but should follow the above directions. Vessels should not attempt to cross the bar, except with a leading wind and moderate weather; and never unless directions are signalled. *Variation* $14\frac{1}{4}^{\circ}$ E.

333.—NEW ZEALAND.—*Foveaux Strait.*—*Light on Centre Island.*—With reference to Notice 73, page 293, 1878, the intended light on Centre island, north side of Foveaux strait, is now exhibited. It is a *fixed* light showing *white* from seaward through an arc of 176° , or between the bearings of S. 82° E. and N. 78° W.; *red* from N. 78° W. to S. 4° E., also *red* from S. 54° E. to S. 82° E.; between the bearings S. 4° E. and S. 54° E., the light is obscured. It is elevated 265 feet above the sea, and is visible 22 miles. The lighthouse, 20 feet high, built of wood and painted white, is situated on the southern extremity of Centre island. Position, lat. $46^{\circ} 28' 30''$ S., long. $167^{\circ} 52' 30''$ E. *Variation*, $16\frac{1}{4}^{\circ}$ E.

334.—UNITED STATES.—*South Carolina.*—*Light on Fort Ripley Shoal, Charleston Harbour, and Castle Pinckney Light discontinued.*—On and after December 1, 1878, a *fixed red* light, lighting the entire horizon, will be exhibited from a hexagonal screw-pile light-house recently erected on Fort Ripley Shoal (Middle Ground), between South channel and Folly island channel in Charleston harbour. Elevation 49 feet above mean low water,

and visible about 12 miles. The structure is placed in 8 feet water; the house and lantern are painted yellow and the foundation red. From it Fort Sumter light bears E.S.E. $1\frac{1}{2}$ mile; Rattlesnake Shoal light-vessel, E. by S. $9\frac{1}{4}$ miles; Sullivan's Island rear light, E. $\frac{1}{4}$ S. $2\frac{3}{4}$ miles. Approximate position, lat. $32^{\circ} 45' 50''$ N., long. $79^{\circ} 54'$ W. Upon the establishment of this light, that at Castle Pinckney will be discontinued.

335.—CANADA.—*Nova Scotia.*—*Halifax Harbour.*—*Outer Buoy with Self-acting Whistle at entrance of Harbour.*—With reference to Notice 271, page 954, a buoy, painted *black*, and surmounted by a 10-inch whistle, is now moored in 36 fathoms water, with the following bearings and distances, viz. :—Sambro island lighthouse, W. $\frac{1}{2}$ N., distant $8\frac{1}{2}$ miles; Chebucto head lighthouse, N.W. by W., distant $6\frac{1}{4}$ miles; position, lat. $44^{\circ} 28' 25''$ N., long. $63^{\circ} 22' 10''$ W.

Note.—Having passed this Outer buoy when bound into Halifax, a N.W. $\frac{1}{2}$ N. course for 6 miles will lead to the Inner automatic buoy (painted *red*), off Chebucto head. After passing westward of the Inner signal buoy at the distance of about half a cable, a N. $\frac{1}{4}$ W. course will lead up the harbour, eastward of Neverfail shoal, and westward of Maugher beach lighthouse. When approaching Maugher beach in thick weather, a good look-out should be kept for the fog-bell on the lighthouse, which is sounded (by machinery) seven times *every minute*. On nearing these automatic buoys in thick or foggy weather, the lead will verify the vessel's position; the outer buoy being in 36 fathoms water, the inner in 21 fathoms. *Variation*, 21° W.

HYDROGRAPHIC NOTICES RECENTLY PUBLISHED BY THE
HYDROGRAPHIC OFFICE, ADMIRALTY, 1878.

No. 30.—BAY OF BENGAL; information relating to Andaman islands.

No. 31.—AUSTRALIA DIRECTORY, Vol. II.; information relating to Bampton island and reefs.

No. 32.—RED SEA PILOT; directions for Jiddah harbour and its approaches.

Leading Light for North Channel.—Andrew's store, the southern house on the beach in Martin's Bay, is a line with the extreme of South head, bearing $E. \frac{1}{2} N.$

Leading Light for South Channel.—The Schoolhouse, a conspicuous single story building on the rising ground northwest of the old Pike's house, in line with the extreme of South head, bearing $E. \frac{1}{2} E.$

Towers.—South head 150 feet high, has a large white signal and on it from which the International Code and general signals for New Zealand ports are shown. Mariners should be guided by these signals, especially the Semaphores and (see page 13, New Zealand Pilot) by which vessels are directed over the bar, to a wharfe within the Heads where a pilot will board them.

Caution.—From the frequent changes of the bar, mariners are cautioned not to place reliance on the leading marks for the channel, but should follow the above directions. Vessels should not attempt to cross the bar except with a leading wind and moderate weather, and never unless directions are signalled. *Variations* Day E.

NEW ZEALAND.—FORECAST STREET.—LIGHT on Centre Island.—In reference to Notice No. page 263, 1873, the illuminated light on Centre Island, north side of Forecast street, is now extinguished. It is a red light showing abeam from seaward through an arc of 175° between the bearings of $S. 52^\circ E.$ and $N. 75^\circ W.$; and from $N. 75^\circ W.$ to $S. 4^\circ E.$, also red from $S. 54^\circ E.$ to $S. 83^\circ E.$ between the bearings $S. 4^\circ E.$ and $S. 54^\circ E.$, the light is obscured. It is situated 265 feet above the sea, and is visible 22 miles. Light-house, 20 feet high, built of wood and painted white, situated on the southern extremity of Centre Island, lat. $41^\circ 25' 30'' S.$, long. $167^\circ 52' 30'' E.$ *Variations* Day E.

NEW ZEALAND.—SOUTH CHANNEL.—*Variations* Day E.
South Channel Light-house, and On
continued.—On and after December 1st, 1873, the light-house lighting the entire harbor, from the entrance to the inner harbor, will be kept burning. (Notice General, below.)
in Charleston Harbor.

895.—CANADA.—Nova Scotia.—Halifax Harbor.—
with Self-acting Whistle at entrance of Harbor.—
Notice 271, page 954, a buoy, painted red and white, with a
10-inch whistle, is now moored in 44 fathoms water in the
following bearings and distances: from the buoy at the entrance
W. $\frac{1}{2}$ N., distant $8\frac{1}{2}$ miles; from the buoy at the entrance
by W., distant $6\frac{1}{2}$ miles; position $44^{\circ} 22' 10''$ N.,
 $63^{\circ} 22' 10''$ W.

Charge against

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- No. 33.—**MEDITERRANEAN PILOT**, Vol. I. ; information relating to beacons at Gibraltar, and to the light on cape de Fer.
- No. 34.—**RED SEA PILOT** ; navigation of inshore passages.
- No. 35.—**RED SEA PILOT** ; additional information on shoals and reefs.
- No. 36.—**CHINA SEA DIRECTORY**, Vol. III. ; particulars respecting rocks in Chino bay, east coast of China.
- No. 37.—**AUSTRALIA DIRECTORY**, Vol. II. ; information relating to Somerset and Thursday island, Torres strait.
- No. 38.—**SOUTH AMERICAN PILOT**, Part II. ; information relating to Magellan strait.
- No. 39.—**AUSTRALIA DIRECTORY**, Vol. I. ; additional information relating to a portion of the south coast of Australia, between capes Leeuwin and Riche.
- No. 40.—**NORTH SEA PILOT**, Part III. ; revised directions for river Humber.

CHARTS, &c., PUBLISHED BY THE HYDROGRAPHIC OFFICE, ADMIRALTY,
IN SEPTEMBER AND OCTOBER, 1878.

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|------|--|---|---|
| 2599 | Red sea :—Jiddah, with its approaches ; and enlarged plan of inner anchorage | 2 | 6 |
| 2701 | Adriatic :—Gulf of Cattaro to Corfu, including the coast of Italy from cape St. Moria di Leuca to Brindisi ; with view | 2 | 6 |
| 2370 | A plan of the port of Memel added. | | |
| 812 | Mediterranean :—Oran harbour and Marsa-el-Kebir bay | 1 | 6 |
| 2451 | England, south coast :—Owers to Dungeness ... | 2 | 6 |
| 957 | New plans of Basiauang bay and port Lebak added. | | |
| 320 | North American lakes :—Lake Superior : with plans of Superior bay ; Rock, Marquette, Ontonagon, Eagle, Agate, and Copper harbours | 2 | 6 |
| 46 | A plan of port Ellen added. | | |
| 850 | North sea :—Noordzee or Ymuiden harbour ... | 1 | 0 |
| 1377 | Sandwich islands :—Hanalai, Kairua, Kealakeakua, and Hilo or Byron bays ; Kawaihae ; and Makee landing | 1 | 6 |

629	Africa, west coast:—Walfisch bay settlement, with enlarged plan of bay	...	...	...	...	1	0
	NEWFOUNDLAND PILOT; comprising also the strait of Belle-isle, and north-east coast of Labrador.—Staff-Com. W. F. Maxwell, R.N.	...	...	...	...	8	0

OUR OFFICIAL LOG.

OFFICIAL INQUIRIES AT HOME, 1878.

(This List is completed to the 18th of each Month.)

301. *Harriet Agnes*, s.s.; built in Sweden in 1865; owned by W. G. Westcott, of London; tonnage, 473; London to Bona; general cargo; supposed to have struck on the wreck of the *Childwall Hall*, on the coast of Portugal, July 18, 1878. Inquiry held at Westminster, November 5, 1878, before Rothery, Wreck Commissioner, Visconti and Hight, N.A. Casualty due to the negligent navigation of the master in steering a course dangerously near the coast in hazy weather. Certificate suspended for six months.

311. *Charlotte Helen*, schooner; *Rambler*, s.s.; the former built of wood at Berwick-on-Tweed, 1859; owned by James Fisher, of Barrow; tonnage, 123; Seville to Carrickfergus; sulphur ore; the latter built of iron at Govan, 1878; owned by Henry Martini, of Glasgow; tonnage, 368; Swansea to Naples; coals; in collision near Cape Finisterre, August 22, 1878, by which the *Charlotte Helen* was sunk, and several lives were lost. Inquiry held at Glasgow, October 21, 1878, before McOnie and Graham, J.P., Powell and Ward, N.A. Mate of the *Rambler* to blame in porting his helm before ascertaining the course of the other vessel, and for not stopping and reversing when it appeared that a collision was inevitable. Certificate suspended for nine months. Charge against master not proved. Certificate returned.

312. *Cingalese*, s.s., iron; built at Wallsend-on-Tyne, 1870, owned by Thomas Harper, of Newcastle; tonnage, 834; Odessa to Bremerhaven; grain; lost near Carnero Point, Gibraltar.

Inquiry held at Liverpool, October 11, 1878, before Raffles, Stip. Mag., Grant and Jones, N.A. Master in default for gross negligence in navigating his vessel, and leaving the bridge and falling asleep in the chart-room, without leaving any responsible officer in charge of the steering. Certificate suspended for three months.

313. *Yoxford*, s.s., iron ; built on the Tyne, 1878 ; owned by Mr. H. F. Swan, of Newcastle ; tonnage, 689 ; New York to England ; grain ; abandoned in the Atlantic Ocean, September 12, 1878. Inquiry held at South Shields, October 23, 1878, before Raffles, Stip. Mag., Pickard and Castle, N.A. Casualty due to the bad storage of the cargo. The Court held master in default for the casualty, and suspended his certificate for three months.

314. *F. E. Althausse*, barque ; built at St. Heliers, Jersey, 1855 ; owned by Robert Robinson, of Blyth ; tonnage, 429 ; Sfax to the Tyne ; grass and ore ; stranded on Cabrita Rocks, Gibraltar Bay, June 28, 1878. Inquiry held at Shields, October 19, 1878, before Yorke, Stip. Mag., Pickard and Castle, N.A. Casualty due to default of both master and mate ; the former in leaving the deck of the vessel when in a critical position, and for drunkenness at that and at other times during the voyage. Certificate suspended for twelve months ; and the latter for negligence in not seeing the cables were bent to the anchors before going into Gibraltar Bay. Certificate suspended for six months.

315. *Commerce* and *Empusa*, s.s. ; the former built of wood at Shelburne, Nova Scotia, 1877 ; owned by Messrs. Lillett ; tonnage, 1,297 ; Philadelphia to Antwerp ; wheat ; the latter built of iron at Stockton, 1878 ; registered in London ; tonnage, 731 ; London to Cardiff ; ballast ; in collision off Hastings, September 26, 1878. Inquiry held October 9, 1878, before Jones, Stip. Mag., Powell and Castle, N.A. Mate of the *Empusa* to blame for leaving the bridge after seeing the ship's flare light, and for not using proper precaution. Certificate suspended for six months.

316. *Bonnie Dunkeld* ; wood ; built at Gloucester, 1869 ; owned by Messrs. Goodridge, of Dartmouth ; tonnage, 177. Inquiry held at Swansea, October 25, 1878, into the cause of an explosion of coal gas, which occurred on board whilst lying at Swansea, September 20, 1878, before Rothery, Wreck Com-

missioner, Aplin and Castle, N.A. Casualty due to the want of proper ventilation, and from an accumulation of explosive gas in the hold, into which a naked light was introduced. The Court held the master in default, but he was an uncertificated officer.

817. *Peri*, s.s.; wood; built at Blyth, 1872; owned by G. T. Raynes and others, of Liverpool; tonnage, 65; Dublin to the Mersey; coal; stranded off the coast of Cumberland, September 25, 1878. Inquiry held at Liverpool, October 14, 1878, before Raffles, Stip. Mag., Grant and Jones, N.A. Court found master in default for neglecting to use the lead. Certificate suspended for three months.

820. *Rover*, s.s.; iron; built at Glasgow, 1874; owned by H. Martini, of that port; tonnage, 264; Middlesbro' to the Mediterranean; iron rails and coals; abandoned near Ushant, October 3, 1878. Inquiry held at Plymouth, November 1, 1878, before Rothery, Wreck Commissioner; Powell and Jones, N.A.; May, C.E. Casualty caused by the sea injection pipe and suction valve of the bilge pump being allowed to remain open at the same time. Chief engineer's certificate suspended for twelve months. No blame attached to master or mate.

821. *Beaumanoir*; wood; built at Prince Edward's Island, 1867; owned by William Dawbarn, of Liverpool; tonnage, 256; Liverpool to New York; sugar; lost on Florida Reef, September 6, 1878. Inquiry held at Liverpool, October 31, 1878, before Raffles, Stip. Mag., Holt and Wilson, N.A. Master free from blame. Court recommended that, as his certificate was lost in the wreck, another should be issued to him.

Princess Alice, s.s., and *Bywell Castle*, s.s.; the former a paddle-steamer, built at Greenock, 1875; owned by the London Steamboat Company; tonnage, 158; Gravesend to London; passengers; the latter built of iron in Newcastle, in 1870; owned by Hall and Co., of that port; tonnage, 891; London to Newcastle; ballast; in collision in Galleon's Reach, River Thames, September 3, 1878. Upwards of 700 lives lost. Inquiry held in London, October 22, 1878, *et seq.*, before Balguy, Stip. Mag., Forster and Parfitt, N.A., and Ravenhill, C.E. Casualty due to breach of Rule 29 of the Thames Conservancy Regulations, by the *Princess Alice* not porting

her helm when she came end on to the *Bywell Castle*. The certificates of the various officers charged were returned, but the mate of the *Princess Alice* was severely censured for not seeing that a proper look-out was kept on board his vessel, and for not reporting to the master when he observed the lights of the *Bywell Castle*.

OFFICIAL INQUIRIES ABROAD.

Euro, s.s., and *Mercury*, ketch ; in collision on June 19, 1878. Inquiry held by the Marine Board of South Australia. Casualty occasioned by the insufficiency of the Riding Light shown from the *Mercury*.

Carlotta, barque ; grounded off the Hajamara, Mouth of the River Indus, June 8, 1878. Inquiry held at Kurrachee, July 2, 1878. Master not to blame. Certificate returned.

Eller Bank, ship ; grounded at Port Adelaide, July 18, 1878. Inquiry held at Adelaide, July 30, 1878. Master free from blame. Certificate returned.

Ellerton, schooner ; grounded in the Wanganui River, July 15, 1878. Inquiry held at Wanganui, July 30, 1878. Casualty due to master not letting go a second anchor, or proceeding to sea. Certificate suspended for six months.

Maiden City, schooner ; lost in the Wanganui River, July 14, 1878. Inquiry held at Wanganui, July 30, 1878. Casualty caused by the vessel springing a leak, and by being insufficiently manned. Master's certificate returned.

Lord of the Isles, barque ; lost on Andres Island, Phillippine Group, July 1, 1878. Inquiry held at Hong Kong, July 31, 1878. Casualty due to an error of judgment on the part of the master in not anchoring when the wind failed him. Certificate returned.

Harlaw, ship ; lost on the Tung Sha Banks, Yangtze Kiang, July 31, 1878. Naval Court held at Shanghai, August 12, 1878. Casualty caused entirely by the injudicious conduct of the pilot in charge. Master and crew exonerated from blame. Second mate highly commended for his gallant conduct in attempting to save life. Certificates returned.

Rhoda, barque ; lost on a reef in the south part of the Straits

of Macassar. Inquiry held at Singapore, August 13, 1878. Casualty occasioned by an error of judgment on the part of the master, who was cautioned. Certificate returned.

Emperor, barque; lost on a reef between the islands of Burtang and Panjang, July 17, 1878. Inquiry held at Singapore, August 16, 1878. Master to blame for negligent and careless navigation. Certificate suspended pending a reference to the Board of Trade. Mate's certificate suspended for six months.

Leonore, barque; lost on an unknown reef, near Naugka Island, Carimata Strait. Inquiry held at Singapore, August 20, 1878. Master to blame for adopting an unknown track instead of the usual one. Certificate returned with a severe reprimand.

Peaheh, ketch; lost during a gale of wind in Broken Bay, by driving from her anchorage. Loss occasioned by insufficiency of ground tackle. No blame due to master.

Circe, s.s.; stranded at Quallah Impah, July 21, 1878. Inquiry held at Penang, August 30, 1878. Casualty due to neglect of use of the lead when close to the land. Master's certificate suspended for six months, and the mate's for twelve months.

Blenheim, s.s.; lost on the N.W. Reef of Becquette, Quebec. Inquiry held at Quebec, September 19, 1878. Casualty due to foggy weather, during which a wrecking schooner (anchored inside the reef) showed a light, which the master mistook for a pilot signal, and steered his vessel right upon the rocks. Master exonerated from blame. Certificate returned.

Cosmopolis, ship; lost on the N.E. of Staten Island, July 4, 1878. Naval Court held at Callao, September 4, 1878. Casualty due to faulty navigation. Master's certificate suspended for six months.

Columbia, s.s.; stranded on a sunken reef in Ballenita Bay, July 28, 1878. Naval Court held at Callao, September 16, 1878. No blame due to master. Certificate returned.

European, s.s., and *Stornoway*, ship; in collision outside Bombay outer light, August 17, 1878. Inquiry held at Bombay, September 2, 1878. Master of *European* to blame for leaving the bridge when he did, and master of *Stornoway* to blame for having no lights burning. Certificates returned.

Lake Megantic, s.s. ; lost on a reef off Otter River Point, July 22, 1878. Inquiry held at Quebec, September 19, 1878. Master in default. Certificate suspended for three months.

Jessie Osborn, ship ; lost near Tennessee Cove. Inquiry held at San Francisco, September 19, 1878. Master in default. Certificate suspended for three months.

Madura, barque ; lost at sea. Inquiry held at Galle, September 11, 1878. Casualty due to springing a leak. No blame attached to master.

GENERAL.

RITUALISTIC COMBINATION IN THE ROYAL NAVY.—One would scarcely think that seamen of the fleet are a likely body on which the ritualistic fraternity would wish to make experiments, or that naval officers are likely to take up with and propagate ritualistic practices. From information we have received, however, there can, we think, be no possible doubt that certain well-known naval officers are exerting influence in high quarters, which, if successful, will place Jack at the mercy of a ritualistic combination, and will convert Her Majesty's ships into "Oratories" and "Seminaries." For our own part we felt a certain twinge when the new service was first brought out, whereby ships of war are "blessed" or "consecrated" on launching. It is by most thinkers deemed to be silly to bless pieces of metal when formed into bells, but as bells usually belong to churches, the practice of blessing them as part of church furniture does not jar on practical common sense as would the blessing of many other inanimate articles and things. Indeed there is no reason why everything about a church, from the weathercock to the door mat, may not be "blessed." Not that the ceremony can possibly do any good ; but because its absurdity is not so irresistibly apparent in the case of ecclesiastical furniture, millinery, and utensils, as it is in other things. But the consecration of an 81-ton gun, or of a combination of iron plates, ribs, and machinery, in the form of a

ship, which is a thing especially designed for slaughter, is, on the face of it, so absurd that the first feeling with which one reads of it is one of supreme ridicule. No one in his senses can for a single instant believe that a blessing can do good to a bell, a gun, or a ship; or to put it practically, that a blessing will avert the risk of casualty, or dispense with the cost of insurance, or lessen the amount of a depreciation fund. This being so, the public have to look around in order to endeavour to discover why it is that a performance so devoid of practical use in itself is resuscitated by a practical people in a practical age. The only answer is, that it must be done in order to please somebody, or in order to propagate some modern idea which, after all, may be a revival of an old error of superstition. The point then is to what brotherhood or society or combination are we to look for this revival? And the further question is, was it the commencement of a movement for re-planting in the mind of the seaman the seeds of what one party may regard as religion, and another party superstition, which the teachings of the last half century have done so much to eradicate? We have heard that a movement is afoot concerning "lay readers" in the Navy, which, if it ever sees the day, may, in the hands of an active ritualistic combination, work a strange and undreamt of revolution in Her Majesty's Naval Forces; and may lead to combinations and consequences that will afford very curious matter for reflection and discussion.

HOW TO ENSURE SUCCESS IN TRADE AND SAFETY AT SEA.—On the launch of the last addition to the Cunard fleet, Mr. John Burns stated that the *Gallia* was the 165th steamship which had been built for his firm, whose fleet since its commencement aggregated upwards of 180,000 tons of steam shipping, propelled by 50,000 horse-power. He was well aware that both on this side and on the other side of the Atlantic the Cunard Company had been thought to be comparatively slow in progress, and traditionally careful of their steps in advance; but he felt convinced that in the long run their measured pace had, under Providence, secured for them any success which they had attained. After considerable

experience in maritime affairs, he had seen that both as regards the policy in the conduct of such a business, and in the construction of vessels suited for its development, it was much easier to make mistakes than to avoid them. He was well aware that his firm had not instantly adopted what were supposed to be modern improvements in some of the branches of naval architecture. That, however, was not because of any disbelief in progress, but because they had laid down a line of action for themselves to have the utility of everything proved before they adopted it; for he had a stern faith that the paramount duty of those engaged in navigation was above all things to secure safety for life and property in so far as the employment of human means would secure it, and he wished to say, with great caution and with a profound belief in a higher power than that of man, that any measure of security attained by the Cunard Company was due, not to good luck or chance, but, firstly, to a most careful equipment and surveillance of their ships and machinery in course of construction; and, secondly, to a rigid discipline amongst their officers and crews, as well as a constant supervision of their ships when engaged in active service. (Applause.) He did not wish this to be called praiseworthy, he rather wished to consider that in carrying out those measures he and his partners were simply performing a duty which devolved upon them. There could be no doubt that in carrying millions of human beings committed to their care, there had been a vast and solemn responsibility, and they had been well rewarded, for the public had fully appreciated their efforts in the direction of safety, and he looked with pardonable satisfaction to the fact that in the Atlantic branch of their service alone they had year by year greatly increased the number of their passengers; and upon some occasions lately they had been obliged to despatch two of their largest vessels on the same day to New York. To tell the truth, he looked upon these facts as being more a palatable and practical compliment than all the encomiums which might be paid to the exertions of his firm. (Applause.)

GENERAL AVERAGE.—The English Central Committee appointed in May last to carry out the resolution adopted at the Antwerp

Conference (1877) of the Association for the Reform and Codification of the Law of Nations, has been actively engaged to obtain the assent of shipowners, underwriters, and others, to adopt the York and Antwerp Rules and insert in all bills of lading, charter parties, and policies of insurance, from and after the 1st January, 1879, the following clause: "General Average, if any, according to York and Antwerp Rules." Upwards of 400 of our ship and steamship owners both in England and Scotland, have given in their written assent agreeing to insert this clause. It is understood that the lists contain the names of Messrs. D. & C. Mac Iver, (Cunard Line); Green & Co., London; Wm. Inman (Inman Steam Ship Co.); Ismay Imrie & Co. (White Star Line); Wright & Co.; Tyne Steam Shipping Co.; E. H. Capper & Co., Cardiff; Tully & Co.; W. Brown Atkinson & Co., Hull; &c., &c., and in fact a large proportion of our great ship and steamship owning firms and companies have lent their sanction to the adoption of these Rules. The same activity is being displayed in the United States. The boards of underwriters of New York, Boston, Philadelphia, &c., &c., have respectively passed resolutions agreeing to accept policies containing the clause, whilst long lists of names of ship and steamship owners from Boston, New York, Philadelphia, and other seaports of the United States are to hand, assenting to the agreement to insert these Rules in their contracts of affreightment. The powerful shipping interests of our Canadian possessions have followed the lead of England and the United States, and before the close of the year it is believed complete lists from Canada, Australia, and East Indies, will be in the possession of the Central Committee on General Average. The movement, indeed, has assumed exceptional proportions, and the International Law Association has agreed to publish a full account of what has been done in Europe, the Continent of America, and in our Colonial Empire, soon after the commencement of the ensuing year.

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